

FIFTH REPORT

OF THE

STATE INSPECTOR OF COAL MINES,

TO THE

GOVERNOR OF THE STATE OF KANSAS.

COMPLIMENTS OF

JOHN T. STEWART,

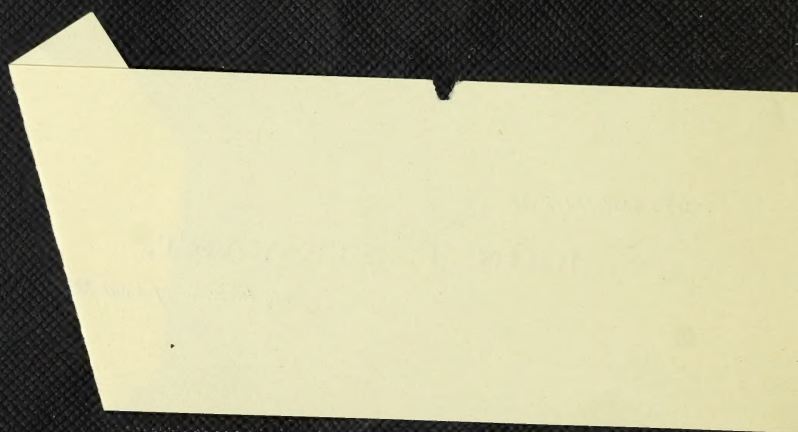
State Inspector of Coal Mines

TOPEKA.

PRESS OF THE HAMILTON PRINTING COMPANY:

EDWIN H. SNOW, State Printer.

1892.



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FOR THE YEAR ENDING DECEMBER 31, 1891.

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OFFICE OF STATE INSPECTOR OF COAL MINES,
SCAMMON, KAS., December 31, 1891.

To his Excellency Lyman U. Humphrey, Governor:

DEAR SIR — I have the honor to herewith submit the fifth report of the
State Inspector of Coal Mines. Very respectfully,

JOHN T. STEWART, *Inspector.*

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CONTENTS.

	PAGE.
REPORT	5
METHODS OF WORKING COAL.....	16
STATISTICS AND DESCRIPTION OF COAL MINING, BY COUNTIES.....	18
SUMMARY.....	52
ACCIDENTS.....	55
BOILER INSPECTION.....	69
REPORTS AS TO VENTILATION.....	72
LEAD AND ZINC MINING.....	75
KANSAS SALT MINES	77
GASES MET WITH IN COAL MINES	78
RECOMMENDATIONS.....	82
INDEX.....	85

REPORT.

THIS report contains a description of the condition of the mines for the year ending December 31, 1891, with the statistics of the output of coal for the years 1890 and 1891.

As stated in my last report, the statistics for 1890 could not be collected except by personal visitation in a great many instances. I have repeatedly sent letters, and blanks accompanying the same, but no answer would be forthcoming, or, when received, would be so carelessly filled that it was of no value. I was determined that my report should not go to press again until the statistics of the current year would be contained therein, which accounts for the delay in the publication.

As usual, complaints have been made about the carelessness of mine bosses in relation to ventilation, which were on investigation generally found to be well grounded. If the workmen would adopt a system of reporting the condition of the mines to the Mine Inspector, it would aid him in the performance of his duties, and result in a material benefit to themselves, and could result in injury to none concerned who intended to comply with the law. Some such method would compel those who are careless to do their duty. Some of the workmen say that they are afraid to complain to the Inspector for fear of being discharged. This is an old bugbear in the minds of miners as a class, and yet there has never been anyone discharged for such cause to my knowledge in the State of Kansas.

Another complaint by the miners is, that when the Inspector comes to the mine he always inquires for the pit boss, and does not ask for any of the workmen to accompany him in the examination of the shaft. There are two reasons why the Inspector goes to the pit boss. In the first place, no miner wishes to leave his work and lose a day for the benefit of others; and the second reason is, that the mine boss *should* accompany the Inspector, as he—the mine boss—is the responsible party for all defects in the enforcement of the law, as it relates to the actual working of the mine. A reading of section 6, chapter 117, Session Laws of 1883, will convince anyone of the truth of the above statement. The law reads as follows:

SEC. 6. In order to better secure the proper ventilation of every coal mine, and promote the health and safety of the persons employed therein, the owner, agent or operator shall employ a competent and practical inside overseer, to be called "mining boss," who shall keep a careful watch over the ventilating apparatus, the air-ways, traveling-ways, pumps, and pump timbers, and drainage, and shall see that as the

miners advance their excavations all loose coal, slate, and rock overhead are carefully secured against falling in upon the traveling-ways. And every underground plane on which persons travel, worked by self-acting pulleys, engines, windlasses, or machinery of whatever description, shall be provided with proper means of signaling between the stopping places and the ends of the plane; and shall furthermore be provided in every case, at intervals of not more than 30 feet, with sufficient man-holes for places of refuge. And every road on which persons travel underground, where the coal is drawn by mules or other animals, shall be provided, at intervals of not more than 60 feet, with sufficient man-holes for places of refuge. And every mine shall be supplied with sufficient prop timber, of suitable length and size for the places where it is to be used, and kept in easy access to. And it shall also be the duty of the mining boss to measure the air current at least once per week at the inlet and outlet, and at the face of the workings, and keep a record of such measurements, and report the same to the Inspector of the State once in every month. The safety lamps used for examining mines, or which may be used for working therein, shall be furnished by and be the property of the owner of said mines, and shall be in charge of the agent of such mine. And in all mines generating explosive gases, the doors used in assisting or directing the ventilation of the mine shall be so hung and adjusted that they will close themselves, or be supplied with springs or pulleys so they cannot be left standing open; and bore-holes shall be kept, not less than 12 feet in advance of the face of every working place, and, when necessary, on the sides, if the same is driven toward and in dangerous proximity to an abandoned mine suspected of containing inflammable gases, or which is inundated with water.

The above will show conclusively that the law has provided for a "mining boss," and it is through this man that the Mine Inspector is to communicate when he desires any changes to be made in the ventilation and safety of the mine. It is not claimed that the Mine Inspector may not make other inquiries, but it is plain that the "mine boss" is held directly responsible under the law; and such being the case, it is but just and fair that he (the mine boss) should be the first to be communicated with when the Inspector visits the mine. The complaint—if well founded—should be laid to the credit of the law and not to the Mine Inspector. It is my opinion that the law providing for a "mining boss" has placed too many duties upon one man—no matter how competent or painstaking he may be. Some of the larger mine operators recognize this fact by employing two—and sometimes three—"mining bosses," or assistants, to aid in attending to the duties enumerated by the law.

Notwithstanding the roof in the mines of this State is what might be termed safe, the majority of accidents have resulted from "falls of roof," and in every instance where such were investigated there were plenty of props and caps within easy reach of the injured. Hurry to get the work done and the coal out before attending to the propping of the roof has in many instances resulted in accident to the workman. This subject is more fully treated under the head of "Accidents."

There have been no serious explosions in the mines of this State during the year last past, but great carelessness has been indulged in by some of the men employed as shot-firers. So frequent and serious had accidents

to those engaged in shot-firing become, that I had the following circular printed and posted up at each mine where it was necessary to have shot-firers employed :

CAUTION.

OFFICE OF STATE INSPECTOR OF COAL MINES, }
SCAMMON, November 12, 1891. }

To Miners and Shot-Firers: The attention of miners and shot-firers is hereby called to that part of the law in bold-faced type, a copy of which is hereunto attached.

The issuance of this circular is made necessary by the fact that, during the month of October, 1891, five accidents occurred to men while acting as shot-firers, one of which proved fatal. This is unprecedented, and shows a negligence and disregard of the law by shot-firers or miners, or both. The increasing practice of shot-firers separating at the bottom of the shaft, and doing their work singly, in order to get done with it in a short and hurried manner, should be discontinued. Also, that of the shot-firer going back immediately after a shot has missed fire; this should not be done until all the shots in the mine have been fired; then those which have missed could be approached, and another trial made to get them off.

JOHN T. STEWART, *Inspector.*

PROTECTION OF LIFE AND PROPERTY IN MINES.

[Session Laws of 1889, ch. 172, p. 252.]

SECTION 1. Shot-firers. SEC. 2. Conditions. SEC. 3. Managers; penalty. SEC. 4. Miners penalty.

Shot-Firers.—SECTION 1. All owners, lessees, operators of, or any other person having the control or management of any coal shaft, slope, drift or pit in this State employing miners to work therein, shall employ shot-firers to fire the shots therein. Said shots shall be fired once a day on each day when any such shaft, slope, drift or pit is in operation, but shall not be fired until after all miners and other employes working therein shall have been hoisted out of said mine.

Conditions.—SEC. 2. It shall be unlawful for any miner or any other person other than the shot-firers provided for in section 1 of this act to fire any shot in any coal shaft, slope, drift or pit in this State. Any miner or other person engaged in mining coal in this State who shall drill any hole or fire any shot in the coal vein at the working-face of any room or entry until so much of said coal vein at said working-face as the said shot or shots are intended to throw down shall have been undermined to the depth of not less than two feet, or sheared or cut to the full depth of the drill or shot-hole and of the full thickness of the coal vein in rooms, or shall have been sheared to the full depth of the drill or shot-hole and the full thickness of vein in entries, or who shall so direct the drilling of such holes as to include between such shearing or mining and the back or rear end of the hole a greater width of coal than is contained between such shearing or mining and the mouth of the hole, shall be deemed guilty of a misdemeanor, and fined as hereinafter provided.

Managers; Penalty.—SEC. 3. Any owner, lessee, operator, or other person having the control or management of any coal shaft, slope, drift or pit, who shall refuse to furnish the shot-firers, as provided for in section 1 of this act, shall be deemed guilty of a misdemeanor, and, on conviction therefor, shall be fined in any sum not less than \$50 nor more than \$200 for each offense, or imprisonment in the county jail in the county where such offense is committed for a period not to exceed 30 days, or by both such fine and imprisonment; proceedings to be instituted in any court having competent jurisdiction.

Miners; Penalty.—SEC. 4. Any miner or other person who shall fire any shot in violation of section 2 of this act shall be deemed guilty of a misdemeanor, and, on conviction therefor, shall be fined in any sum not less than \$50 nor more than \$200, or imprisonment in the county jail in the county where such offense is committed not to exceed 30 days, or by both such fine and imprisonment; proceedings to be instituted in any court having competent jurisdiction.

Since this warning was issued, greater care has been taken in the firing of shots, and, as a consequence, less accidents have occurred from that cause.

Section 20, chapter 143, Session Laws of 1885, confining the amount of powder to be taken into a mine at one time to five pounds, on investigation was found to be not a sufficient quantity of powder for a full day's work in the majority of the mines located in Cherokee and Crawford counties; therefore the following law was presented and passed at the last session of the Legislature; and I caused the same to be issued on cards, 9x12 inches in size, and posted at each mine where powder was used:

NOTICE.

HANDLING OF POWDER.

AN ACT to amend an act entitled "An act to provide for the health and safety of persons employed in and about the coal mines of Kansas, and providing for the inspection of the same," and amendatory of section 3851 of the General Statutes of 1889.

SECTION 1. It shall be unlawful for any miner or other person to take into or have in his possession in any coal-mine shaft, slope or pit in this State more than twelve and one-half ($12\frac{1}{2}$) pounds of powder or any other explosive substance at any one time; and all such powder or other explosive substance shall be kept in a tight box, securely locked, and such boxes shall be kept at least 20 yards from the working-face in all such coal-mine slopes, drifts, or pits; and it shall be the duty of all pit bosses or other persons who shall be in charge or control of any coal-mine slope, drift or pit in this State to keep watch over and see that the provisions of this act are complied with; and any person violating or neglecting to comply with the provisions of this act shall be deemed guilty of a misdemeanor, and shall, on conviction before any court having jurisdiction thereof, be fined in any sum not less than \$10 nor more than \$50, or by imprisonment in the county jail not more than 30 days, for each and every such offense; and the possession of more than $12\frac{1}{2}$ pounds of powder or any other explosive substance in such coal mine, slope or drift shall be *prima facie* evidence of the person taking said powder or other explosive substance into such mine, slope, or drift.

SEC. 2. Any miner, workman or other person who shall intentionally injure any safety lamp, instrument, airway, brattice, or obstruct or throw open airways, or carry lighted lamps, pipes or matches into places worked by the light of safety lamps, or shall move or disturb any part of the machinery, or who shall open a door and not close it again, or enter any place of the mine against caution, or disobey any order given in carrying out the provisions of this act, or who shall do any willful act whereby the lives or health of persons or the security of the mine or the machinery is endangered, shall be guilty of a misdemeanor, and, on conviction, shall be punished by a fine, or imprisonment, at the discretion of the court.

SEC. 3. All acts or parts of acts in conflict with the provisions of this act are hereby repealed.

SEC. 4. This act shall take effect and be in force from and after its publication in the official State paper.

Approved March 10, 1891.

The attention of miners and mine owners is respectfully called to the provisions of the above law.

JOHN T. STEWART, *Inspector.*

Despite this caution and warning, in some of the mines, the workmen persisted in taking into the mine kegs containing 25 pounds of powder. There has been a great deal of trouble in securing compliance with this law. It seems strange that, when the law was changed to give the men enough powder for a day's use, they would continue to take into the

mine powder in quantities to do the work for several days, thus causing a large storage of one of the most dangerous explosives. Such action not only puts in jeopardy the life of the violator of the law, but equally menaces the lives of men who obey the law strictly. As a general rule, when attention was called especially to the law by a visit to the mine, a more general observance of the same has taken place.

On page 96 of the Fourth Report of the Mine Inspector of this State, under the "Recommendations" of changes in the mining laws, the following occurs:

For the better protection of the miners and other workmen employed in and about the mines, it is necessary that legislative action be had on the present incomplete mining law. The law needs revision, and some essential additions thereto are required.

At every session of the Legislature, with one exception, changes have been made in section 2, chapter 117, Session Laws of 1883. Every change has made it worse and more complicated. The amendments made at the session of 1889 to the above section exempts shafts which are 700 feet deep, or over, from the operation of the law. The final provision of the section leaves the responsibility of the number of men to be employed in such mines on the Mine Inspector. Another material change in the same section is the one changing the depth that an escapement shaft shall be sunk during each six months from 100 to 50 feet. Such changes as noted above are retrogressive, and not in accordance with the mining and mechanical engineering knowledge of the last quarter of a century, when it is a well-known fact that shafts have been sunk in the State over 800 feet deep in six months. No doubt the cost of sinking a shaft to a depth over 700 feet is considerable; but what is cost compared with the lives of the workmen? Such examples as the Hartley disaster in England, where 204 lives were lost, and the Avondale holocaust in Luzerne county, Pennsylvania, with many similar cases where so large numbers were not involved, should be a bar to all legislation even tacitly favoring the working of single shafts—except that necessary to make the proper communications.

Section 6 of chapter 143, Session Laws of 1885, repealed section 4, chapter 117, of Session Laws of 1883, which read as follows:

SEC. 4. Where the natural strata are not safe, every working, pumping and escapement shaft shall be securely case-lined or otherwise made secure, and all escapement shafts shall be provided with ladders securely fastened, so as to bear the combined weight of not less than 10 men ascending or descending the same; and where ladders cannot be conveniently used, other safe means of hoisting the persons employed in any such coal mine shall be kept ready, so as to be available in case of any accident to the regular hoisting shaft or the machinery in use at the same.

The repealing of this section left no provision for means of escape by a second opening in case of accident to the main hoisting shaft, thus rendering two of the principal provisions of the law nugatory. This section, or one similar, should be enacted into law as soon as possible.

In accordance with the above recommendations, I endeavored to get a bill passed that would remedy the evils enumerated as far as possible. The following is a copy of chapter 174 of the Laws of 1889, and also a copy of Senate bill 191:

CHAPTER 174, LAWS 1889.

AN ACT to amend section 1 of an act of the Legislature of the State of Kansas, entitled "An act to amend an act entitled 'An act to provide for the health of persons employed in and about the coal mines of Kansas, and providing for the inspection of the same,' being chapter 117 of the Laws of 1883," approved March 7, 1885.

Be it enacted by the Legislature of the State of Kansas:

SECTION 1. That section 1 of an act of the Legislature of the State of Kansas, entitled "An act to amend an act entitled 'An act to provide for the health and safety of persons employed in and about the coal mines of Kansas, and providing for the inspection of the same,' being chapter 117 of the Laws of 1883," approved March 7, 1885, be and the same is hereby amended so as to read as follows: Section 1. That section 2 of chapter 117 of the Laws of 1883 be and the same is hereby amended so as to read as follows: It shall not be lawful, after six months from the passage of this act, for the owner, agent or operator of any coal mine to employ any person at work within said coal mine, or permit any person to be in said coal mine for the purpose of working therein, unless they are in communication with at least two openings, separated by natural strata of not less than 80 feet in breadth if the mine be worked by shaft or slope, and if worked by drift not less than 50 feet: *Provided, however,* That such coal mine shall not exceed 100 feet in depth, from the surface to the coal; and for every additional 100 feet, or fractional part thereof, six months additional time will be granted; but in all cases the number of men shall be limited not to exceed 25 until the second opening is perfected and made available; and a roadway to the same shall be kept open, not less than three feet high and four feet wide, thereby forming a communication as contemplated in this act, but the limit herein prescribed as to the number working in the shaft before the completion of the second opening shall not apply to mines exceeding 700 feet in depth. And for a failure to do as provided in this section, the owner, agent or operator shall be subject to the penalty provided for in section 16 of this act. And in case furnace ventilation being used before the second opening is reached, the furnace shall not be within 40 feet of the foot of the shaft, and shall be secured from danger from fire by brick or stone walls of sufficient thickness; and the flues shall be composed of incombustible material to an extent of not less than 30 feet from the furnace and the mine while being driven for making or perfecting a second opening. In all cases where the human voice cannot be distinctly heard, the owner, agent or operator shall provide and maintain a metal tube from the top to the bottom of the shaft or slope, suitably adapted to the free passage of sound, through which conversation may be held between persons at the bottom and top of such shaft or slope; and there shall also be maintained the ordinary means of signaling to and from the top and bottom of such shaft or slope. In all mines of 100 feet in depth or over from the surface to the ground an improved safety-catch shall be used, and sufficient horns or flanges shall be attached to the sides of the drum of every machine that is used for lowering or hoisting persons into and out of said mine where steam is used, and adequate brakes shall be attached thereto. The main link attached to the swivel of the wire rope shall be made of the best quality of iron, and shall be tested by weights or other means satisfactory to the Inspector of Mines of the State; and bridle chains shall be attached to the main link from the cross-pieces of the cage, and no single-link chain shall be used for lowering or raising persons into or out of said mine; and not more than six persons shall be lowered or hoisted by the machinery at any one time; and only sober, competent and experienced engineers shall be employed, and said engineer shall have attained at least the age of 18 years; and on no account shall any coal be hoisted, or timber or any other material sent up or down, or empty cars, while persons are descending into or ascending out of said mine. In all coal mines hereafter opened, or that shall hereafter go into operation in the State, the owner thereof or owners, lessee, agent or operator shall construct such escapement shaft as is now required by law in this State, *at the rate of 50 feet every six months until such escapement shaft shall have been fully completed*; and until such escapement shaft is fully completed and connected with the main shaft, it shall be unlawful to work over 25 men in said mine: *Provided further,* That the number of men to be employed in any mine 700 feet deep or more prior to the time when a second or air shaft is sunk, shall be designated by the State Mine Inspector after a careful examination of all the conditions as to the safety and health of the men in the mines.

SEC. 2. That original section 1 of said act be and the same is hereby repealed.

SEC. 3. This act shall take effect and be in force from and after its approval, and publication in the official State paper.

Approved February 28, 1889.

SENATE BILL No. 191.

By Senator NORTON: An act to amend an act entitled "An act to provide for the health and safety of persons employed in and about the coal mines in the State of Kansas," and providing for the inspection of the same, and amendatory of paragraph 3847, the same being section 18, General Statutes of 1889.

Be it enacted by the Legislature of the State of Kansas:

SECTION 1. In all coal mines that are now or have been in operation prior to the first day of May, A. D. 1891, and which are worked by or through, shaft, slope or drift, if there is not already an escapement shaft to each and every coal mine, or communication between each and every coal mine, or some other contiguous mine, then there shall be an escapement shaft, or other communication, making at least two distinct means of ingress and egress for all persons employed or permitted to work in such coal mine. Such escapement shaft, or other communication with a contiguous mine as aforesaid, shall be constructed in connection with every vein or stratum of coal worked in such coal mine, which shall be at least three feet high and at least five feet wide; and the time to be allowed for such construction shall be one year when such mine is less than 500 feet in depth, and two years for all mines over 500 feet in depth, from the first day of May, A. D. 1891. And in all cases where the working-faces of one mine has been driven up to, or into the workings of another mine, the respective owners of such mines, while operating the same, shall keep open a roadway, as hereinbefore described, thereby forming a communication as contemplated in this act. Each and every such escapement shaft shall be separated from the main shaft by natural strata of not less than 80 feet in breadth if the mine be worked by shaft or slope; and if worked by drift, not less than 50 feet, and shall be equipped with stairways or ladders having landing places or platforms at least every 20 feet from the bottom to the top, or in lieu thereof, such hoisting apparatus as will enable the employes in the mine to make safe and speedy exit in the case of danger or any accident to the regular hoisting shaft or the machinery in use at the same; all such escapement shafts shall be kept clear of water, ice, smoke or any other obstruction. In all coal mines that shall go into operation for the first time after the first day of May, A. D. 1891, and in all cases where such mine or mines shall hereafter be put into operation in this State, the owner, the agent or operator of the same shall construct an escapement shaft, as is required by this act to be constructed in coal mines in this State, at the rate of 500 feet per annum, until such escapement shaft shall have been fully completed.

SEC. 2. In case of furnace ventilation being used before the second opening is reached, the furnace shall not be within 40 feet of the foot of the shaft, and shall be well secured from danger by the fire by the use of incombustible material for the construction of the same to a distance of 30 feet from the furnace until a second opening is completed. In all mines of 100 feet in depth, or over, from the surface of the ground, where steam is used for lowering or hoisting the workmen employed therein, shall have a good and sufficient brake attached to the hoisting drum, and no single-link chain shall be used for lowering or hoisting persons into or out of said mines, and not more than six persons shall be lowered or hoisted on any single cage at any one time, and only sober, competent and experienced engineers shall be employed, and said engineers shall have attained the age of 21 years; and on no account shall any coal be hoisted or timbers or any other material sent up or down, or empty cars, while persons are descending into or ascending out of said mine. And for a failure to comply with the provisions of this act, the owner, agent or operator of any coal shaft, slope or drift in this State shall be deemed guilty of a misdemeanor, and subject to a fine of not less than \$100, nor more than \$1,000, or by imprisonment in the county jail not more than three months, or by such fine and imprisonment.

SEC. 3. All acts or parts of acts in conflict with the provisions of this act are hereby repealed.

SEC. 4. This act shall take effect and be in force from and after its publication in the official State paper.

This bill passed the Senate. The changes sought to be made therein, in my opinion, are for the improvement of the mines and the safety of the miners. In the first place, it forces those parties who have not a second

opening to their mine to sink 500 feet in the first year, if their shaft is that depth—under or over there is no exception; while the law of 1889 gave the mine owners four years to sink the same distance. Secondly, under the law as it stands to-day, and as it has been since the repeal of section 4, chapter 117, Session Laws of 1883, a second opening would be of no practical use to the miners as a means of escape in case of accident to the main shaft, as the operators are not required to provide any means of getting out of the same after it has been sunk. Senate bill 191 made provision for a means of escape when the second opening had reached the bottom. (See that part printed in *italic*.) This bill would also have cleared the law of useless and meaningless verbiage and all indefinite provisions, as it states clearly and definitely what was intended to be accomplished by it, and attaches a definite penalty for violation of the law. It requires the services of an expert to find any penalty for violation of the law of 1889, and, if found at all, the conflicting statements surrounding the same are such as to render the law weak in what should be its strongest point. If this bill had become a law, three of the mines in Leavenworth county which had been running without a second opening would have had to commence sinking an escapement shaft on the first of May, 1891, and would have had the same completed in about six months without any further trouble, as the law would have been definite on the matter. But when this bill failed of passage and complaints were reaching me from the Leavenworth mines, I applied to the Attorney General for a construction of the law as it now stands, and received the following reply:

STATE OF KANSAS, OFFICE OF ATTORNEY GENERAL,
TOPEKA, March 7, 1891.

John T. Stewart, Inspector of Coal Mines:

DEAR SIR—Your communication of March 5, addressed to the Attorney General, wherein you desire his official opinion on the proper construction to be placed upon the clauses limiting the number of workmen to be employed in any coal mine in this State to which an escapement shaft has not been fully constructed, as required by law, has been referred to me for reply.

Paragraph 3847 of the General Statutes of 1889 limits the number of men who may be employed to work in any such coal mine to 25, provided said mine does not exceed 700 feet in depth; and instead of making such law apply to mines of a greater depth than 700 feet, the Legislature has, in said paragraph, expressly provided that as to such mines it shall be the duty of the State Mine Inspector, after a careful examination of all the conditions, as to the safety and health of the men employed therein, to designate the number of men who may be so employed. I am, therefore, clearly of the opinion that it is your duty to designate the number of men to be employed in a mine of 700 feet in depth or more, and the duty of the owner, agent or operator of any such coal mine to be governed by your decision in relation thereto.

Respectfully yours,

GEORGE W. CLARK,
Assistant Attorney General.

Upon the receipt of this letter from the Attorney General, I sent a copy of the same to the superintendents of the Home Mining Company, the Riverside Mining Company, and the Brighton Mining Company, with instruc-

tion to have some adequate means of escapement provided at as early a date as possible. At my next visit to these mines I found that a second opening had not been made, although plans had been drawn for the same on several different schemes, but each had been rejected as imperfect. After a careful examination of the mines, I issued the following order:

STATE OF KANSAS, OFFICE OF STATE MINE INSPECTOR,
SCAMMON, October 12, 1892.

DEAR SIR—In accordance with paragraph 3847 of the General Statutes of 1889, and the opinion of the Assistant Attorney General, a copy of which is hereunto attached, you are hereby notified that on and after the 15th day of October, 1891, the number of workmen to be employed at any one time in your mine, located in Leavenworth county, Kansas, shall be limited to the number of 25, until a second opening or escapement shaft is completed.

Yours respectfully,

JOHN T. STEWART, *State Inspector of Coal Mines.*

On the night of the 12th of October, 1891, the engine and boiler houses of the Brighton mine were burned, forcing the men to remain idle for several months, which left the same out of the controversy as to a second opening at that time. After several visits and considerable correspondence, the owners of the Home and Riverside mines (K. & T. No. 34), entered into a contract to drive a tunnel from the workings of one mine to the workings of the other, connecting both mines, and forming an escapement shaft within the meaning of the law. As my order of October 12—before referred to—was still in force, the miners employed at these mines petitioned me as follows:

Hon. John T. Stewart, State Mine Inspector :

We, the undersigned petitioners, do most respectfully pray that you rescind your order of October 12, limiting the number of employés in the Riverside mine to 25, for the following reasons:

All precautions that is possible to exercise to prevent accidents is now and always has been exercised by the company as far as we are able to determine, and we consider the mine comparatively safe.

We are informed that a contract has been entered into between the Kansas and Texas Coal Company [Riverside mine] and the Home Mining Company, by which a connection will be made between the shafts of the two companies, affording abundance of air and a means of escape much sooner than could be secured by each company sinking an air shaft.

We know that work on this connection has been in progress for more than four weeks, and we do believe that by your rescinding this order this connection can be completed at a much earlier date than it possibly could were your order of October 12 to remain in force.

Many of us are permanently located in this community; we own our homes, and to be deprived of the means of earning a livelihood for ourselves and family at this time—as we most surely will be if this order remains in force—would be disastrous, and do ourselves and families an injury that we do not believe it is your purpose or desire to have done.

This petition was signed by 142 men employed at the Home mine, and 173 men working at the Riverside mine. In view of the facts set forth in

these petitions, and taking into consideration the hardships that the men employed claimed would result from a rigid enforcement of my order during the winter season, I did not rescind my notice of October 12, but refrained from commencing legal proceedings so long as the operators were acting in good faith and pushing the work on the tunnel from both mines as fast as possible. Since the receipt of the petition, I have heard no complaint from the men, although I have visited the mines twice. Although the workings of the law requiring a second opening, as it relates to mines in Leavenworth county, has not resulted in any casualty, the law is defective. No man should be entrusted with the authority this law gives. No man wants to bear the responsibility of saying how many men should be employed in any mine in Kansas, no matter what depth it may be, particularly when the man charged with this great responsibility can only be present at widely-separated intervals of time. As Inspector, I have no specific complaint to make concerning the mines specified here, particularly as the workmen have petitioned me not to interfere; but no man can tell at what time an accident may occur.

In my last report I used the following language:

During the year 1890 a new development in mining took place, namely, that of salt mining. It has been suggested to me by some of the workmen engaged therein that salt mines should be placed under the provisions of the mining laws which could be made applicable thereto.

The following are samples of the complaints which reach this office (names and places being omitted at the request of the writers of the same), and are presented to show the necessity of the action recommended:

To the Mine Inspector, State of Kansas, Topeka:

DEAR SIR—You are hereby requested to come here by the miners working in the mines of the ——— Salt Company, ———, Kansas, and inspect the mine and shaft, as there is no escape, and bad air, and many other dangers, and they also hoist with men on one cage and loaded cars on the other cage.

Yours truly, ———.

To the Mine Inspector:

DEAR SIR—I thought I would inform you that ———, at ———, Kansas, is running a gypsum mine contrary to the State law of Kansas, also contrary to the United States law, and it is necessary for some person that has the right and the legal authority to investigate the matter, to see that these works are kept in a safe condition, in order to protect life; for they have neither air shaft nor air fan, nor they have not got it propped on the inside as it should be—only now and then a prop. I was thinking of writing to Washington, D. C., but I was informed that there was a Mine Inspector in Topeka that would do just as well. Please let me hear from you soon.

Yours truly, ———.

On receipt of the first letter I went to Topeka, and, after consultation with Governor Humphrey, he went with me to the Attorney General, and requested him to give me authority—as an agent of the State and in the name of the State—to visit this mine, as the law only empowers me to visit and inspect coal mines. This the Attorney General decided was beyond his power, and I so notified all complainants of a like nature.

Some complaints have come to this office to the effect that the Mine Inspector does not visit the mines as often as he should do. In answer to this objection—which cannot be disputed—I can but repeat what was said on page 97 of my previous report, as follows :

Section 4, chapter 143, Laws of 1885, provides that it shall be the duty of the Inspector to visit each mine in the State at least twice each year. As there are 200 mines in the State, and to make even a cursory inspection of each one would take the greater part of one day, it would require 400 days to comply with the law. As some of the mines in the State are 400 miles apart, and a great many over 200 miles, it can be plainly seen that it is a physical impossibility for one individual to fulfill this requirement of the law as Mine Inspector.

No provision is made for any kind of assistance to be rendered the Mine Inspector. He has to attend to the correspondence of the office, collect statistics, attend to the boiler inspection, make out his report to the Governor, visit all places where serious accidents occur, attend to special complaints from mines located at widely divergent points in the State, and do many other things that are constantly requiring attention. This fault complained of is not with the Inspector, it is inherent in the law.

METHODS OF WORKING THE COAL.

The method of working the coal depends largely on the thickness of the vein, the quality of the roof, and, in some instances, the nature of the bottom or floor of the mine. In Leavenworth county the coal is 22 inches thick, the shafts are over 700 feet in depth, the roof good, and mining is done on the long-wall system. By this method all the coal is taken out; very little slack coal being made, as the under-cutting or mining is done in the clay underlying the coal, and, when under-cut, the natural weight or pressure of the superincumbent strata generally breaks down the coal without the use of powder. The clay from the under-cutting, and the *debris*, or slate, taken down to make the roadway the proper height, are thrown behind the miners, filling the space where the coal was taken from. This clay from the under-cutting and the slate from the roadway, which are thrown into the space formerly occupied by the coal, are known as "gob." By this system of mining the air is carried along the face of the working, and is an easy and efficient method of ventilation, provided too many men are not kept on one split or section of the air. The long-wall method is adopted in Osage and Franklin counties, and at two mines in Linn county, and is also practiced in Cloud, and in all the lignite mines in the northwest part of the State.

In Cherokee and Crawford counties the room-and-pillar system is the only one in use. This system is more complicated and requires greater care to conduct the air to the workmen. Three methods of the room-and-pillar system are practiced in this field, viz.: Single entry, partial double entry, and double entry.

The single-entry plan is by driving one single roadway or entry, and turning rooms on each side of this entry, about 30 feet apart, carrying the air forward by curtains placed at the entrance of the rooms—which is a very unsatisfactory way of working a mine. It is almost a complete failure so far as ventilation is concerned, and is only justifiable where a small acreage of coal is to be taken out.

The partial double entry is where two parallel entries are driven, but only one of which is brushed and used for haulage purposes. This plan is a little improvement on the single-entry system, but is by no means to be recommended either for ventilation or the getting of coal out of the mine.

The double-entry method is the best and safest for the purposes of ventilation and the haulage of coal. Two parallel entries are driven, 12 or 20 feet apart—according to the depth of the mine and quality of the roof. The coal left between the entries is called the entry pillar, and the rule is

that break-throughs are made six feet wide and at intervals of 30 feet. These break-throughs are for the purpose of ventilation; therefore the air is never more than 30 feet—at any time—from the face of the working, if the break-throughs are made at the proper distance apart. By this means the air is properly distributed to the rooms as well as to the entries. Both entries are brushed to the height of five feet, allowing mules to go into either entry at any time, which facilitates the output and haulage of coal. This is the most practical, and, in the end, the cheapest, safest and best method of working coal in these two counties.

STATISTICS AND DESCRIPTIONS OF COAL MINING, BY COUNTIES.

BOURBON COUNTY COAL MINING.

ANALYSIS.—Kind of coal, bituminous; average thickness of vein, 18 inches; average depth of coal from surface, 8 feet; total output for 1890, 480,354 bushels, or .60 per cent. of the total output of the State; total output for 1891, 500,000 bushels, or .73 per cent. of the total output of the State; estimated value of output at the mines: 1890, \$33,624; 1891, \$35,000; number of men employed in 1891, 175.

The coal from Bourbon county is obtained from drift mines and strip banks, the greater part of the coal being taken from the latter. The coal is of a fine quality, and is known as the "Fort Scott red coal." Almost the entire output is used for household purposes in Fort Scott and vicinity. At various times during the year about 175 men are employed in the coal fields of this county.

CHAUTAUQUA COUNTY COAL MINING.

ANALYSIS.—Average thickness of vein, 16 inches; total output for 1890, 37,000 bushels, or .07 per cent. of the total output of the State; total output for 1891, 38,200 bushels, or .06 per cent. of the total output of the State; estimated value of the output for 1890, \$3,330; 1891, \$3,438; number of men employed in 1891, 8.

There are several drift mines in Chautauqua county in the vicinity of Leeds, on the banks of Big Caney creek, which are worked for local purposes only. The vein has an average thickness of 16 inches, and is a fair quality of bituminous coal. I have not been able to get any returns from this county, except from Budd & Muncey, who operate "Connor's Slope," at Leeds, and employ 8 or 10 men. It is almost impossible to get returns of output from local mines unless a personal visit is made.

CHEROKEE COUNTY COAL MINING.

ANALYSIS.—Number shaft mines, 21; kind of coal, bituminous; average thickness of vein, 42 inches; average depth of coal from surface, 82 feet; average number of days worked: 1890, 173, or 56 per cent. of working days; 1891, 175, or 57 per cent. of working days; total output for 1890, 19,338,189 bushels, or 30.85 per cent. of total output of the State; total output for 1891, 20,601,277 bushels, or 32.50 per cent. of the total output of the State; estimated value of output: 1890, \$966,906; 1891, \$1,030,057; number of men employed, 1891, 1,826.

COAL MINES, CHEROKEE COUNTY.

Office number	NAMES OF OPERATORS.	POST-OFFICE ADDRESS.	Number of days mine worked.		Number bushels mined.		Estimated value of output.	
			1890.	1891.	1890.	1891.	1890.	1891.
1.....	Woods & North.....	Cherokee.....	190	200	243,200	256,000	\$12,160	\$12,800
2.....	Columbus Coal Company.....	Columbus.....	210	240	1,183,166	1,186,928	59,138	59,346
3.....	Osthoff Bros.....	".....	217	212	47,671	42,000	2,383	2,100
4.....	Robinson's Shaft.....	".....	233	250	38,000	40,980	1,900	2,049
4 ¹	James Hall.....	Scammon.....	67	67	.....	8,400	.....	420
5.....	Keith & Perry Coal Company:	.....	.....	.....	.....	.....	.....	.....
5.....	Shaft No. 2a.....	Scammon.....	202	225	2,373,530	2,430,105	118,676	121,505
6.....	" 4.....	".....	195	225	1,982,730	2,746,936	99,136	137,346
7.....	Norton Coal Company.....	".....	200	224	1,552,950	1,827,000	77,647	91,350
8.....	J. J. Welch.....	".....	180	190	155,000	77,500	3,875	3,875
9.....	Wm. Theobald.....	Sherman City.....	110	114	42,000	42,500	2,100	2,125
10.....	J. H. Durkee Coal Company, Nos. 1 and 2.....	Weir City.....	135	146	2,000,000	2,055,000	100,000	102,800
11.....	Excelsior Coal Company.....	".....	.....	60	.....	23,671	.....	1,183
11 ¹	William Hamilton, sr.....	".....	220	220	.....	1,827,000	.....	91,350
12.....	Keith & Perry Coal Company:	.....	.....	.....	.....	.....	.....	.....
12.....	Shaft No. 2b.....	Weir City.....	180	220	1,293,320	679,831	64,666	33,991
13.....	" 3.....	".....	180	160	1,621,655	882,121	81,082	44,106
14.....	" 5.....	".....	180	200	100,880	1,179,258	5,044	58,962
15.....	" 6.....	".....	480	480	.....	752,550	.....	37,627
16.....	Kansas and Texas Coal Company:	.....	.....	.....	.....	.....	.....	.....
16.....	Shaft No. 18.....	Weir City.....	2131	260	2,564,800	3,154,900	128,240	157,745
17.....	" 23.....	".....	3121	3110	1,667,125	765,175	83,356	38,258
18.....	Parsons Coal Company ⁷	".....	180	160	850,000	590,000	42,500	26,000
19.....	Weir Bros.....	".....	182	240	179,461	293,213	8,973	14,660
19.....	Weir City Coal Company, Nos. 2 and 3.....	".....	172	194	942,701	1,126,395	47,135	56,319
20.....	Strip banks.....	".....	.....	.....	500,000	509,814	25,000	25,490
Totals and averages.....			173	187	19,338,189	22,428,277	\$966,906	\$1,121,407

¹ New shaft. Commenced hoisting coal in September, 1890.² In ten months.³ In nine months.⁴ Commenced operating about August 1, 1891.⁵ Mine only operated five months.⁶ Mine shut down about June 1, 1891.⁷ Name changed to "The Central Coal Company," in 1891.

COAL MINES, CHEROKEE COUNTY—CONCLUDED.

OFFICE NUMBER.	Number kegs of powder used.		Average number employés daily—1891.				Average price paid per bushel.		Mine open- ing.
	1890.	1891.	Miners.	Boys.	Others.	Total.	Summer.	Winter.	
1.....	860	900	25	5	12	42	3 $\frac{1}{2}$	4	Shaft.
2.....	1,682	2,200	57	4	17	78	3 $\frac{1}{2}$	4	"
3.....	95	84	3	.....	3	6	3 $\frac{1}{2}$	4	"
4.....	76	81	3	1	2	6	3 $\frac{1}{2}$	4	"
4 $\frac{1}{2}$.....	.....	22	2	.....	1	3	3 $\frac{1}{2}$	4	"
5.....	5,127	4,927	129	5	32	166	3 $\frac{1}{2}$	4	"
6.....	4,987	5,264	120	4	31	155	3 $\frac{1}{2}$	4	"
7.....	3,005	3,852	70	5	17	92	3 $\frac{1}{2}$	4	"
8.....	150	76	10	1	3	14	3 $\frac{1}{2}$	4	"
9.....	110	120	7	.....	2	9	*	4 $\frac{1}{2}$	"
10.....	4,800	5,010	200	15	41	256	3 $\frac{1}{2}$	4	"
11.....	.....	70	12	.....	4	16	3 $\frac{1}{2}$	4	"
11 $\frac{1}{2}$.....	.....	3,927	70	6	20	96	3 $\frac{1}{2}$	4	"
12.....	2,729	1,165	43	7	.....	50	3 $\frac{1}{2}$	4	"
13.....	2,763	1,512	62	10	25	97	3 $\frac{1}{2}$	4	"
14.....	278	2,021	70	5	15	90	3 $\frac{1}{2}$	4	"
15.....	.....	1,380	80	2	19	101	3 $\frac{1}{2}$	4	"
16.....	5,129	6,838	142	6	28	176	3 $\frac{1}{2}$	4	"
17.....	3,354	1,667	107	2	23	132	3 $\frac{1}{2}$	4	"
18.....	1,500	1,600	45	2	14	61	3 $\frac{1}{2}$	4	"
19.....	450	637	25	.....	7	32	3 $\frac{1}{2}$	4	"
20.....	1,444	2,150	63	.....	15	78	3 $\frac{1}{2}$	4	"
Strip banks.....	.....	.....	.....	.....	70	70	.....	.....	.....
Totals.....	38,519	44,503	1,345	80	401	1,826	.....	.....	.....

* Winter trade.

Record of Inspection.

WOODS & NORTH COAL COMPANY.—Located 1 $\frac{1}{2}$ miles south of Cherokee, on the Joplin division of the Fort Scott & Memphis railroad. This company abandoned this shaft in June, 1891. No further work has been done in the lower vein. Richard Davis has leased the top vein, and put up a horse-power gin. He is filling the coal chutes of the above road, and also does some local business. The shaft is in fair condition. Richard Davis, pit boss.

COLUMBUS COAL COMPANY.—Located on a switch at Stipville, four miles north of Columbus, on the Joplin division of the Fort Scott & Memphis railroad. At the last examination, the ventilation was poor in some places. The stack of the furnace being open injured the ventilating power of the same. On measuring the air current of the down cast and up cast, it showed the legal amount of air per man, but nothing for mules and lamps. A new air shaft and furnace has been located and is in operation, at the western limit of the present workings. John Spencer, superintendent; Chris. Newland, pit boss.

OSTHOFF BROS.—This shaft is located one mile southwest of Stipville. It has no railroad connection. It is ventilated by furnace. The condition of the mine is fair. Two or three miners are employed besides the members of the family. This mine has been leased for a term of years to a coal company formed in Columbus, Kas., who are getting in a switch from the Joplin division of the Fort Scott & Memphis railroad. This company intend to operate the mine to its fullest capacity.

ROBINSON'S SHAFT.—Located 3 $\frac{1}{2}$ miles north of Columbus, and operated by horse power. It does a local trade, having no railroad connections. The labor in the mine is performed largely by members of the family, who are practical miners. The mine is kept in good condition. George Robinson, pit boss.

JAMES HALL.—This is a new shaft opened in 1891, and run by horse power. It has no railroad connections, and the coal has to be hauled about three-fourths of a

mile to No. 8 switch for shipping. Being a new mine, very little opening has been done so far. The coal is of a good quality. James Hall, pit boss.

KEITH & PERRY COAL COMPANY.—Mine No. 2*a*, located 1½ miles northeast of the city of Scammon. This shaft has been worked out and the machinery moved to the company's No. 7 shaft, one mile directly north of above-named city. John Jenkins, pit boss.

Shaft No. 4. Located west of the limits of the city of Scammon, on a switch of the Joplin division of the Fort Scott & Memphis railroad. Ventilated by a fan 14 feet in diameter and 4 feet width of blade. The shaft is worked partially on the double-entry system. Thomas B. Scaife, pit boss.

NORTON COAL MINE No. 2.—This mine is worked partially on the double-entry system. It has a second opening by breaking through into their No. 1 mine, which is used as an escapement shaft. It is located one-half mile northwest of the city of Scammon, on a switch connecting with the Joplin division of the Fort Scott & Memphis railroad. Ventilation and condition fair. W. S. Norton, superintendent; John Zimmerman, pit boss.

WELCH'S MINE.—This mine is owned by John J. Welch. Its operations have ceased for the present. It is located about two miles southwest of Scammon.

THEOBALD'S SHAFT.—A horse-power plant 10 miles west of Scammon, and one-half mile from Lightning creek. It has a 24-inch vein of good quality coal, 90 feet deep. It employs only a few men in winter, for local trade. William Theobald, pit boss.

J. H. DURKEE COAL COMPANY.—Mine No. 1. Located on the west line of the city limits of Weir City, on a lease of the Baker land. It has switch connections with the Cherry Vale division of the Kansas City, Fort Scott & Memphis railroad. Fan, 12 feet in diameter and 4 feet width of blade, for ventilation. Air and roadways in good condition. Joseph Humble, pit boss.

Mine No. 2. This is a slope mine. It is located on a lease of the Grarvat land, and hauls the coal in the mine cars a distance of one-half mile, to a switch on the Pittsburg division of the St. Louis & San Francisco railroad. Mine well aired and roads in fair condition. Joseph Humble, pit boss.

EXCELSIOR COAL COMPANY.—Located one-fourth of a mile south of the city limits of Weir. It has no railroad connections, but does a shipping business, hauling the coal by wagon to a switch of the Cherry Vale division of the Fort Scott & Memphis railroad. This is a new shaft, which commenced operations in 1891. It is owned and worked by a number of miners on the coöperative plan. It is run by horse power. Wright Shaw, pit boss.

WILLIAM HAMILTON, SR.—Mine No. 1. Located one mile north of Weir City, on a switch of the Cherry Vale division of the Fort Scott & Memphis railroad. This is a comparatively new mine, and is worked on the partial-double-entry system. At my last visit the air was dull at the face of the second west entry on the main north entry. The mine is considerably troubled with what is generally termed "swamps," or partial dips and raises in the strata. It is well equipped with a pair of hoisting engines—10x16-inch cylinders—made by the Keystone Iron Works, Kansas City, Mo. Ventilation is maintained by a fan 14 feet in diameter and 3½ feet face. Ventilation and roads in fair condition. James Hamilton, pit boss; William Hamilton, sr., superintendent.

KEITH & PERRY COAL COMPANY.—Mine No. 2*b*. Located within the city limits of Weir, on the west side. This mine was operated on a lease by William Hamilton, sr., but is worked out, and the machinery moved to another location.

Mine No. 3. This shaft was located on a switch of the Cherry Vale division of the Fort Scott & Memphis railroad, but has been abandoned. The machinery and top work has been removed to the company's No. 8 mine, west of the city of Weir, 1½ miles.

Mine No. 5. Is located one mile west of Weir City, on a switch connecting with the Cherry Vale division of the Fort Scott & Memphis railroad. This is a new mine, put in operation in November, 1890. It is ventilated by a fan 14 feet in diameter and 4 feet width of blade, and is worked on the partial-double-entry system. At my last visit the air was poor in the first east entry on the north side, requiring a door on the cross entry, which has since been put in place, materially assisting the ventilation. The stopping and curtains were in poor condition all over the mine, which since my visit has been partially remedied, and improvements are still being made. Archie Fulton, pit boss.

Mine No. 6. Is a new shaft, located one mile west of the limits of Weir City. Has railroad connections by switch with the Pittsburg & Weir City division of the St. Louis & San Francisco railroad. It is worked on the double-entry system, and is one of the finest mines in this coal field. Ventilation is by fan 14 feet in diameter and 4 feet face. Air and roadways in excellent condition. At my last visit to this mine I found that the break-throughs in the pillars between entries were too narrow—in some instances less than four feet—where in no case should a break-through be made less than six feet wide and the height of the vein being worked. It has four currents of air and two overcasts—one on each side of the shaft. William Scott, pit boss.

KANSAS AND TEXAS COAL COMPANY.—Mine No. 18. Located two miles north of Weir City, on a switch connecting with the Pittsburg & Weir City division of the St. Louis & San Francisco railroad, and also a switch from the Cherry Vale division of the Kansas City, Fort Scott & Memphis railroad. The shaft is ventilated by two fans—one 10 feet in diameter and 3 feet width of blade, and one 8 feet in diameter and same width of blade, 3 feet. There is plenty of air in the mine, but it is not conducted up to the face as well as it ought to be, for want of enough doors and curtains to carry it forward. Many of the break-throughs on rooms and entries were not properly closed. At my last visit the air had improved very little from the condition that it was in when I made my previous examination. The system of single entry used in this mine is not conducive to good air, as there are always from two to six men working inside of the last air current. W. H. Barrett, assistant superintendent; D. Thompson, pit boss.

Mine No. 23. This mine is located two miles northeast of Weir City, on a switch connecting with the Pittsburg & Weir City division of the St. Louis & San Francisco railroad. This shaft was in fair condition at my last visit. It has considerable bad roof and many horsebacks to contend with. It is worked on the single-entry system. Ventilation is by fan, 10 feet in diameter—one of Crawford & McCrimmin's make. This mine only worked five months in 1891. W. H. Barrett, assistant superintendent; P. Walsh, pit boss.

CENTRAL COAL COMPANY (formerly Parsons Coal Company).—Mine located two miles northwest of Weir City, and connected by switch with Cherry Vale division of the Fort Scott & Memphis railroad. The air was in fair condition at the time of my last visit. This mine is generally dry, and requires to be kept watered to allay dust. Peter H. White, superintendent and pit boss.

WEIR BROS.' SHAFT No. 2.—Located two miles west of Weir City limits, on a switch of the Pittsburg & Weir City division of the St. Louis & San Francisco railroad. This is a new mine run by steam power. It is 96 feet deep. It is ventilated

by a fan 7 feet in diameter and $3\frac{1}{2}$ feet width of blade. At my last visit the air was poor in the first west entry on the north side and the first east entry on the same side, several doors being required for the proper circulation of air, which remedies were promised to be supplied by the pit boss as soon as possible. Louis Myers, pit boss.

WEIR CITY COAL COMPANY.—Mine No. 2. Is located on a switch of the Cherry Vale division of the Kansas City, Fort Scott & Memphis railroad. This is a slope with an endless-rope system of hoisting, which seems to operate in a very satisfactory manner. A fan has been erected at this mine, which materially aids the ventilation. New doors have also been built to conduct the air. Richard Bennett, superintendent; H. Helm, pit boss.

Mine No. 3. This is a slope, and is located in the southeast part of Weir City. It has no railroad connection, the coal being hauled by teams to a switch of the Cherry Vale division of the Kansas City, Fort Scott & Memphis railroad—about three-fourths of a mile. — Bennett, pit boss.

COFFEY COUNTY COAL MINING.

ANALYSIS.—Thickness of vein, 12 to 16 inches; depth of coal from surface, 8 to 14 feet; total output for 1890, 430,000 bushels, or .60 per cent. of the total output of the State; total output for 1891, 434,560 bushels, or .63 per cent. of the total output of the State; estimated value of output: 1890, \$38,700; 1891, \$38,905; total number of employés, 1891, 110.

Some shafts have been sunk in Coffey county in the vicinity of Lebo, and there are a few drifts open along the banks of Coal creek. But little comes from these places, nearly all of the output being strip coal. As the vein is only from 8 to 14 feet from the surface, and varies in thickness from 12 to 16 inches, it will require close work for regular shaft mining to compete with the strip banks so long as they are so readily worked. The mining underneath the coal is a sort of sandstone. The regular royalty in Coffey county is 1 cent a bushel.

CRAWFORD COUNTY COAL MINING.

ANALYSIS.—Number shaft mines, 16; kind of coal, bituminous; average thickness of vein, 42 inches; average depth of coal from surface, 70 feet; average number of days worked, 1890, 158, or 51 per cent. of working days; 1891, 146, or 47 per cent. of working days; total output for 1890, 21,606,377 bushels, or 34.34 per cent. of the total output of the State; total output for 1891, 23,119,629 bushels, or 33.56 per cent. of the total output of the State; estimated value of output: 1890, \$1,080,316; 1891, \$1,155,972; number of employés, 1891, 2,099.

COAL MINES, CRAWFORD COUNTY.

Office number	NAMES OF OPERATORS.	POST-OFFICE ADDRESS.	Number of days mine worked.		Number bushels mined.		Estimated value of output.	
			1890.	1891.	1890.	1891.	1890.	1891.
1	John Schwab.....	Cherokee.....						
2	Cherokee and Pittsburg Coal Company, No. 4.....	Cherokee.....		110				\$4,603
3	Bell & Co.....	Coalvale.....	240	230			\$155,176	175,573
4	Kansas Shaft Coal and Mining Company.....	Cornell.....		594	3,103,522	3,511,977		12,706
5	Western Coal and Mining Company:							
6	Mine No. 2.....	Fleming.....	220	208	1,704,398	1,423,025	85,219	71,151
7	" 3.....	".....	88	211	595,564	1,668,050	29,778	83,402
8	" 4.....	Lane, Mo.....	207	214	2,240,409	1,969,050	112,020	98,452
9	Cherokee and Pittsburg Coal Company:							
10	Mine No. 1.....	Frontenac.....	240	210	5,748,440	5,654,695	287,422	282,734
11	" 2.....	".....		45		590,677		29,533
12	Pittsburg and Midway Coal Company:							
13	Mine No. 1.....	Midway.....	188	151	32,869	55,039	1,643	2,752
14	" 2.....	".....		120		40,297		2,014
15	Kansas and Texas Coal Company:							
16	Mine No. 11.....	Pittsburg.....	57		393,300		19,665	
17	" 17.....	".....	131	120	1,956,400	1,739,900	97,820	86,995
18	" 20.....	".....	181	150	1,633,500	1,320,525	81,675	66,026
19	" 22.....	".....	138	100	2,337,275	1,949,500	116,863	97,475
20	" 28.....	".....	346	160	860,700	1,019,615	43,035	50,980
21	Minard Bros.....	".....		136		459,009		22,950
22	Wear Coal Company.....	".....		86		110,775		5,588
23	Strip banks.....	".....			1,000,000	1,261,779	50,000	63,768
Totals and averages			158	146	21,606,377	23,119,629	\$1,080,316	\$1,155,972

¹ Mine idle from May 1 to October 1, 1890.² In five months; mine abandoned in May, 1890, being worked out.³ In 11 months.⁴ Had no shaft in 1891. Bought about 40 cars strip coal and 15 cars shaft coal and slack. We have done nearly nothing since August.⁵ Out of four months.⁶ Mine idle June 1 to August 15—2½ months.

COAL MINES, CRAWFORD COUNTY—CONCLUDED.

OFFICE NUMBER.	Number kegs of powder used.		Average number employes daily—1891.				Average price paid per bushel.		Mine opening.
	1890.	1891.	Miners.	Boys.	Others.	Total.	Summer.	Winter.	
1.....		270	21	1	7	29	3½	4	Shaft.
2.....	6,000	700	150		38	188			"
3.....									
4.....		499	25		12	37	3½	4	Shaft.
5.....	4,017	3,231	65	13	24	102	3½	4	"
6.....	1,561	4,198	75	6	28	109	3½	4	"
7.....	4,027	3,420	90		28	118	3½	4	"
8.....	12,000	12,100	285		56	341	3½	4	"
9.....		1,000	190		33	223	3½	4	"
10.....	1,300	2,308	64		25	89	*82½	*94	"
11.....		1,918	72		19	91	*82½	*94	"
12.....	786		45	7	19	71	3½	4	"
13.....	3,910	3,479	80	8	21	109	3½	4	"
14.....	3,267	2,641	70	6	22	98	3½	4	"
15.....	4,674	3,899	100	8	19	127	3½	4	"
16.....	1,721	2,039	55	2	17	64	3½	4	"
17.....		600	†15		8	23	†.....		"
18.....		‡180	30	2	8	40		4	"
Strip banks.....					230	230			
Totals	43,463	42,482	1,432	53	614	2,099			

* Per ton. — † Fifteen to November 1; for balance of year, 50.

‡ Twenty-five cents per box, in slope; 4 cents per bushel, in shaft.

§ From September 1, when mine started, to end of year.

Record of Inspection.

JOHN SCHWAB.—Mine located about two miles east of Cherokee, on a switch of the Cherry Vale division of the Kansas City, Fort Scott & Memphis railroad. This mine was opened in the early part of 1891. It was operated by horse power until recently, when a steam plant was put in; and many other changes have been made for the better and more economical working of the mine. The coal is pretty good in this mine, but the roof is very hard and irregular. Ventilation fair. John Schwab, jr., pit boss.

CHEROKEE AND PITTSBURG COAL COMPANY.—Mine No. 4. Located at Chicopee, four miles southwest of Pittsburg, near the terminus of the Chanute & Pittsburg division of the Atchison, Topeka & Santa Fé railroad. At my last visit this mine was in good condition, being worked on the double-entry system, which facilitates the ventilation and also the handling of the coal. Ventilation is maintained by a fan 15 feet in diameter and 4 feet face, made by William Cole & Co., Washington, Ind. William Conners, pit boss.

BELL & Co.—Mine located at Coalvale. It has not been worked during the past year.

KANSAS SHAFT COAL AND MINING COMPANY.—This is a new mine, opened in the spring of 1891. It is operated by steam power. The shaft is 57 feet deep, worked on the double-entry system, and ventilated by a fan 10 feet in diameter, with 3-foot face. Air in fair condition, with the exception that at the face of two entries where connections had not been made by break-throughs, but this will be remedied in a few days. The mine is located on a switch of the Nevada & Minden division of the Missouri Pacific railroad. John Byrne, superintendent; Peter McQuade, pit boss.

CHEROKEE AND PITTSBURG COAL AND MINING COMPANY.—Mine No. 1. Located on the Chanute and Pittsburg division of the Atchison, Topeka & Santa Fé railroad, one-half mile south of Frontenac. This is the largest mine in southern Kansas, having a capacity of 950 tons per day. The mine is well equipped in every way. At my last visit the cross-section entries were nearly all completed, thus shortening the

air travel over four miles through the old workings, and giving high entries to pass through, thus bringing the air nearer the working-faces. Roads and ventilation in good condition. This is a dry mine, and requires the roadways to be watered at short intervals to allay the dust. This mine is equipped with one of "Ramsey's patent box-car loaders," with an engine to run the same apart from the other machinery at the mine. William Ellwood, assistant superintendent; John Cody, superintendent.

Mine No. 2. Located one mile northeast of Frontenac, on the same line of railroad as No. 1. There have been only a few men employed in this mine, making repairs and mining some coal, for the last two years. William Ellwood, assistant superintendent.

PITTSBURG AND MIDWAY COAL COMPANY.—Mine No. 2. Located on a switch of the Joplin and Girard division of the St. Louis & San Francisco railroad, near Midway. The shaft is in fairly good condition; only the roadways were muddy in some places, owing to caves to the surface which admitted considerable water. Some of the doors were needing repairs, which the pit boss promised to make as soon as possible. The mine will be worked out in a few months. Mine No. 1, belonging to this company, was worked out some months ago. John McLean, pit boss; T. R. Jones, superintendent.

WESTERN COAL AND MINING COMPANY.—Mine No. 2. Located at Fleming, on the Nevada and Minden division of the Missouri Pacific railway. The ventilation of this mine is supplied by a fan 10 feet in diameter and 4 feet in width of blade. The mine is worked partially on the single-entry system. The air is weak in many parts of the mine, as it has a long ways to travel, and many of the air-ways being small the friction is hard to overcome. The workings of the mine are very extensive, and to enlarge all the air-ways of the mine would be a useless expense, as it is nearly worked out. J. W. Gardner, pit boss; Josiah Lane, superintendent.

Mine No. 3. Located one mile northeast of Fleming, on the line of the same railway as No. 2. At my last visit this mine was in fair condition. It is worked on the partial double-entry system. The air was fair as a whole, but at the face of some of the entries, and the rooms adjoining the same, the air was dull. Roads in fairly good condition and mine comparatively dry. Some of the roadways required to be watered occasionally to allay the dust. Ventilation is maintained by a "Cole" fan, 10 feet in diameter and 4 feet face. Ed. Kelly, pit boss.

Mine No. 4. Located one mile east of the Missouri State line, on a switch connecting with the Nevada and Minden division of the Missouri Pacific railway. This mine was in good condition at my last visit. Ventilation good with few exceptions, where break-throughs were not completed. Roadways in good condition and dry. Ventilation is maintained by a "Cole" fan, 10 feet in diameter and 4 feet face. John Russell, superintendent; Wm. McGinnis, pit boss.

KANSAS AND TEXAS COAL COMPANY.—Mine No. 11. This mine was worked out early in 1891, and the machinery removed and placed at mine No. 37 of the same company.

Mine No. 17. Located one-half mile west of Litchfield, on a switch connecting with the Joplin and Girard division of the St. Louis & San Francisco railroad. This mine is worked partly on the double-entry system; in fact, it had recently been changed from the single to the double entry. Where some break-throughs had not been completed, some doors and curtains were required, which the pit boss promised to have attended to right away. One side of the mine was abandoned, being worked out. Roadways were generally in a fair condition, a ditch having been recently completed, carrying nearly all the water off the roads to a pump shaft,

where it is lifted from the mine. Ventilation is maintained by a Crawford & McCimmin fan, 8 feet in diameter and $3\frac{1}{2}$ feet face. James Monahan, pit boss.

Mine No. 20. Located one mile west of the city of Pittsburg, on a switch of the Pittsburg and Weir City division of the St. Louis & San Francisco railroad. This shaft is being worked on the single-entry system, and at my last visit the air was in poor condition at the face of the fourth west entry, six men being at work inside the air. The pit boss promised to have the matter remedied immediately; but the single-entry system should not be tolerated in any mine, as it is in the end as expensive as the double-entry plan, and is always a source of trouble and dissatisfaction to all concerned. Ventilation is maintained by a fan 10 feet in diameter and 3 feet face. P. Comisky, pit boss.

Mine No. 22. Located one mile northwest of Litchfield, on a switch of the Joplin and Girard division of the St. Louis & San Francisco railroad. This mine is worked on the double-entry system, and the ventilation is good. The roadways and mine as a whole were in first-class condition. It is a dry mine, and requires to be watered on the roadways occasionally; but as a rule the dust and rubbish are cleaned up and taken away in mine cars on the days that the mine is not hoisting coal. Ventilation by a fan 10 feet in diameter and $3\frac{1}{2}$ feet face. John Barrowman, pit boss.

Mine No. 28. Located one mile north of Pittsburg, on a switch of the Joplin and Girard division of the St. Louis & San Francisco railroad. This mine is worked on the single-entry system, and the air as a rule was not carried up to the working-faces, as it is practically impossible to do so under this system. This mine is greatly troubled with "horseback" and clay veins, which adds to the difficulties in the way of good ventilation. This mine is comparatively dry, and the roadways are in fair condition. P. Shearman, pit boss.

Mine No. 37. Located one mile west of Litchfield, on a switch of the Joplin and Girard division of the St. Louis & San Francisco railroad. This is a new mine, worked on the single-entry system, and has the same fault as to ventilation as all mines worked on this plan—the air cannot be carried close enough to the face of the workings. The air was bad on the first south entry on the west, as the face of the entry was 100 feet ahead of the air. The pit boss promised to have this matter remedied immediately. Roadways dry and in good condition. Depth of shaft, 60 feet. Ventilation by fan 10 feet in diameter and 3 feet face. Vincent Gladdis, pit boss.

MINARD BROS.—This mine was opened in 1891, and is located on a switch of the Nevada & Minden division of the Missouri Pacific railway. The shaft is 40 feet deep, and is worked on the double-entry system. It is ventilated by a fan 10 feet in diameter and $3\frac{1}{2}$ feet width of blade. It has a good traveling-way; produces a good quality of coal. L. S. Minard, pit boss.

WEAR COAL COMPANY.—Mine No. 2. Located three miles southwest of Pittsburg, on the line of the Cherry Vale division of the Fort Scott & Memphis railroad. This is a new mine, 28 feet deep; ventilation and roadways in good condition. The top work of the mine was raised recently to facilitate the better handling of coal, and a new fan was erected, 10 feet in diameter and 5 feet face. A. B. Kirkwood, superintendent; John Kirkwood, pit boss.

CLOUD COUNTY COAL MINING.

ANALYSIS.—Kind of coal, lignite; average thickness of vein, 22 inches; average depth of coal from surface, 55 feet; total output for 1890, 170,000 bushels, or .30 per cent. of the total output of the State; total output for 1891, 176,000 bushels, or .25

per cent. of the total output of the State; estimated value of output: 1890, \$11,900; 1891, \$12,320. Number of employes in 1891, 80.

Record of Inspection.

The mines of this county are nearly all at or near Minersville. The coal mined here is consumed in the immediate vicinity. As the mines are not worked steadily, the condition of some of them is not of the best. Several complaints have reached me, and I have notified the owners to have the necessary changes made, and it has been promised that the work should be done immediately. I am sorry to say that while work on these improvements has been commenced promptly and enough done to keep within the law, yet the completion is too slow. However, I have reason to believe that the operators, as a rule, desired to obey the law.

BAKER & RICHARDSON.—About 12 men are employed in this shaft. A second opening or air shaft is now open. This mine is located at Minersville.

ALEX. HENDERSON.—Six men are employed here. It is worked only in the winter months. It has no escapement shaft.

FARMER & NEITZEL.—This mine is located at Minersville, and has no railroad connection. Eight men are employed. The mine has two openings, and is ventilated by furnace.

CURTIS MINE.—Although this mine is located just across the county line, the operator's address is Minersville. The mine has a good air shaft; seven men are employed.

JAMES MURRAY.—The old slope has been abandoned, and a new shaft sunk, about 300 feet north of the old opening. There is no air or escapement shaft yet. Six men are employed.

ELLSWORTH COUNTY COAL MINING.

ANALYSIS.—Kind of coal, lignite; thickness of vein, 8 to 22 inches; total output for year 1890, 125,000 bushels, or .20 per cent. of the total output of the State; output for the year 1891, 151,200 bushels, or .22 per cent. of the total output of the State; estimated value of output: 1890, \$10,000; 1891, \$12,096; number of employes, 1891, 71.

There are no shaft mines in operation in this county, the openings all being on the drift plan. The town of Wilson is the center of the coal field. The coal is almost entirely disposed of to local consumers. There is much room for improvement in the drifts of this county; although I have had no complaints, nor the record of any accidents, yet the ventilation and roadways when I visited were not in an entirely safe condition, but the pit bosses promised to make the needed repairs immediately. No powder is used in the mining here.

FRANKLIN COUNTY COAL MINING.

ANALYSIS.—Number of shaft, slope and drift mines, 14; kind of coal, bituminous; average thickness of vein, 14 inches; average depth of coal from surface, 20 feet; average number of days worked in 1890, 215, or 70 per cent. of working days; 1891, 223, or 72 per cent. of working days; total output for 1890, 779,350 bushels, or 1.25 per cent. of total output of the State; total output for 1891, 838,000 bushels, or 1.22 per cent. of the total output of the State; estimated value of output for 1890, \$66,834; 1891, \$71,907; total number of men employed for 1891, 196.

COAL MINES, FRANKLIN COUNTY.

Office number.....	NAMES OF OPERATORS.	POST-OFFICE ADDRESS.	Number of days mine worked.		Number bushels mined.		Estimated value of output.	
			1890.	1891.	1890.	1891.	1890.	1891.
1.....	John Bagsley.....	Pomona.....	200	210	25,000	30,000	\$2,000	\$2,400
2.....	C. Bush.....	".....	200	205	10,000	11,000	800	880
3.....	John M. Dyer.....	".....	200	206	75,000	80,000	6,000	6,400
4.....	J. P. Lindsay.....	".....	200	210	20,000	21,000	1,600	1,680
5.....	Paynter & Challand.....	".....	150	155	30,000	32,000	2,400	2,560
6.....	William Pyles.....	".....	160	200	20,000	25,000	1,600	2,000
7.....	John T. Morgan.....	Ransomville.....	260	265	20,000	23,000	1,600	1,840
8.....	Ransom & Co.....	".....	260	263	20,000	22,000	1,600	1,760
9.....	" ".....	".....	260	265	170,000	175,000	13,600	14,000
10.....	Richard Hodge.....	Williamsburg.....	220	222	21,000	24,000	1,995	2,280
11.....	Philip Hunt.....	".....	240	250	18,750	25,000	1,780	2,375
12.....	McKissick & Love.....	".....	200	210	20,000	25,000	1,900	2,375
13.....	Roberts Bros.....	".....	220	222	22,000	24,000	2,090	2,280
14.....	Price & Rusbatch.....	".....	248	250	37,000	37,500	3,515	3,562
	Strip banks.....	".....			270,600	283,500	24,354	25,515
	Totals and averages.....		215	223	779,350	838,000	\$66,834	\$71,907

COAL MINES, FRANKLIN COUNTY—CONCLUDED.

OFFICE NUMBER.	Number kegs of powder used.		Average number employés daily—1891.				Average price paid per bushel.		Mine open- ing.
	1890.	1891.	Miners.	Boys.	Others.	Total.	Summer.	Winter.	
1.....			5	1	2	8		6	Drift.
2.....			3		1	4		6	"
3.....			16	1	2	19		6	"
4.....			4		2	6		6	"
5.....			*		4	4			Shaft.
6.....			5		2	7		6	Drift.
7.....			4		1	5		6	"
8.....			4		1	5		6	"
9.....	50	60	25		3	28		6	"
10.....			5		2	7		8	"
11.....			4		2	6		8	"
12.....			5		2	7		8	"
13.....			5		2	7		8	"
14.....			6		2	8		8	"
Strip banks.....					75	75			
Totals.....	50	60	91	2	103	196			

*Machine mining; average four men.

Record of Inspection.

JOHN BAGSLEY.—This is a drift mine, run in from the bluff of the creek, and has only one opening. When these drift mines run in too far, they are generally stopped or abandoned, and a start made again in another place.

C. BUSH.—This drift is worked on the same principle as the John Bagsley drift, as are those mines worked by many others in the vicinity of Pomona, during the winter months of each year. They supply farmers and others in the vicinity with coal during the winter months.

JOHN M. DYER.—This coal drift is located on the side of a bluff, about three miles south of Pomona. It has no railroad connections, and only does a local business. It is ventilated by furnace; ventilation poor. Roads in good order; iron tracking being laid in the same. John M. Dyer, superintendent; William Ward, pit boss.

J. P. LINDSAY.—Another mine located in the bluff in the vicinity of Pomona, and working a few men in the winter months to supply local trade.

PAYNTER & CHALLAND.—This shaft is located about two miles south of Pomona. It has no railroad connections, and does a local and shipping trade. It is a distance of about $1\frac{1}{2}$ miles from the railroad track of the Ottawa division of the Kansas Southern railway. There is a mining machine being operated for under-cutting the coal at this mine. It is the property and invention of J. P. Paynter, one of the owners of the mine. When I visited the mine, the machine was not in operation, so a careful description cannot be given of it. This mine has two openings.

JOHN T. MORGAN.—This drift is located one mile northwest of Ransomville, and has no railroad connections, doing a local business. It has two openings, and is ventilated by furnace. Ventilation and roads in good condition. J. T. Morgan, pit boss.

RANSOM & Co.—This mine is located at Ransomville, on the Ottawa and Burlington branch of the Southern Kansas railway, and is connected by a switch. Does a shipping business. It is ventilated by furnace, and has four currents. Ventilation poor. There is no second opening to this mine, and they employ from 2 to 16 men. James Simms, pit boss.

RANSOM'S DRIFT.—Located one mile from the railroad, at Ransomville. It is

leased by George Clark. Does a local and shipping business. George Clark, pit boss.

Philip Hunt, McKissick & Love, D. E. Price, Roberts Bros., Richard Hodge, Price & Rusbatch, and many others, to a more or less number, mine coal in the winter season for local trade in the immediate vicinity. They have no regular system of mining, each party putting in a drift to suit himself at the most convenient place, without any regard to the mining law, or anything else.

LABETTE COUNTY COAL MINING.

ANALYSIS.—Kind of coal, bituminous; average thickness of vein, 18 inches; average depth of coal from surface, 10 feet; total output for 1890, 50,000 bushels, or .08 per cent. of the total output of the State; output for 1891, 62,000 bushels, or .09 per cent. of the total output of the State; estimated value of output: 1890, \$4,500; 1891, \$5,580; number of employés, 1891, 27.

Labette county coal is all obtained from strip banks, and comes from the vicinity of Oswego. The output is consumed by local trade.

LEAVENWORTH COUNTY COAL MINING.

ANALYSIS.—Number shaft mines, 5; kind of coal, bituminous; average thickness of vein, 22 inches; average depth of coal from surface, 720 feet; average number of days worked: 1890, 236, or 77 per cent. of working days; 1891, 228, or 74 per cent. of working days; total output for 1890, 6,676,070 bushels, or 10.60 per cent. of the total output of the State; total output for 1891, 7,479,406 bushels, or 10.60 per cent. of the total output of the State; estimated value of output: 1890, \$400,563; 1891, \$448,762; number of men employed, 1891, 887.

COAL MINES, LEAVENWORTH COUNTY.

Office number.....	NAMES OF OPERATOR.	POST-OFFICE ADDRESS.	Number of days mine worked.		Number bushels mined.		Estimated value of output.	
			1890.	1891.	1890.	1891.	1890.	1891.
1.....	Brighton Coal Company.....	Harkness.....	1200	167	384,500	575,765	\$21,870	\$34,545
2.....	Hone Mining Company.....	Leavenworth.....	250	260	715,325	1,228,823	42,919	73,729
3.....	Kansas and Texas Coal Company, Mine No. 34.....	".....	215	186	1,149,700	1,341,750	68,982	80,505
4.....	Leavenworth Coal Company.....	".....	207	217	2,676,123	2,700,000	160,567	162,000
5.....	State mine.....	Lausing.....	310	310	1,770,422	1,633,068	106,225	97,983
Totals and averages.....			236	228	6,676,070	7,479,406	\$400,563	\$448,762

¹ Worked in nine months.

OFFICE NUMBER.	Number kegs of powder used.		Average number employés daily — 1891.					Average price paid per bushel.		Mine opening.
	1890.	1891.	Miners.	Boys.	Others.	Total.	Summer.	Winter.		
1.....	3	3	73	3	19	95	4½	5	Shaft.	
2.....		16	120	8	25	153		4	"	
3.....		3	200	20	33	253		4	"	
4.....		72	300	46	40	386		4	"	
5.....		1500				2			"	
Totals.....		588	693	77	117	887				

¹ In sulphur-top.² Convict labor.³ Powder generally used for brushing sulphur-top; amount not reported.

Record of Inspection.

BRIGHTON COAL COMPANY.—This shaft is located five miles southwest of Leavenworth and $3\frac{1}{2}$ miles west of Lansing. It is owned and operated by the Brighton Coal Company, who also own about $4\frac{1}{2}$ miles of railroad, which was built and is operated by the company, and gives them connection with the Atchison, Topeka & Santa Fé, Missouri Pacific and Wyandotte & Northwestern railroads. On the 12th of October, 1891, a fire, originating in the engine house, burned it down, together with the boiler house and all attachments, except the buildings at the top of the shaft, which were saved by the earnest exertions of the workmen connected with the mine. This accident caused the mine to cease work for three months. At my last visit the shaft was in good condition, and ventilation excellent, being maintained by a fan 16 feet in diameter with 5-foot face. There is no escapement at this shaft yet, but the company has promised to sink one at as early a date as possible, and which would have been started before now had it not been for the accident above mentioned. Bennett Brown, superintendent.

HOME MINING COMPANY.—This mine is located inside the limits of the city of Leavenworth. There has been erected a fan 20 feet in diameter and 5 feet width of blade, which gives ample ventilation for the mine. No escapement shaft has been sunk at this mine, but a tunnel, $6 \times 5\frac{1}{2}$ feet, is in course of construction since December, 1891, to connect with the workings of the Riverside mine, which, it is expected, will be completed at an early date. In the meantime, all uncovered lights and fire are kept at a safe distance from around the top of the shaft, and all precautions possible are maintained to prevent fire. It is equipped with a first-motion hoisting engine, 500 horse power, made by the Litchfield (Ill.) Engine Company; size of drum, 12 feet in diameter, $1\frac{3}{8}$ -inch crucible-steel rope, single-deck cage carrying two mine cars each. Peter Strauss, superintendent; William Johnson, pit boss.

KANSAS AND TEXAS COAL COMPANY No. 34.—Located two miles south of the city of Leavenworth, on the line of the Missouri Pacific railway. The shaft is 720 feet deep, worked on the long-wall system. It is ventilated by a 15-foot fan with a 4-foot face. The air is carried to the face of the workings by four separate splits, giving each section fresh and pure air. A pair of new hoisting engines have recently been placed in this mine. They are 24×48 inch cylinders, attached to a 12-foot drum, $1\frac{3}{8}$ inch steel rope, hauling a single-deck cage carrying two mine cars. A tunnel is being driven to make connection with the Home mine workings, which will form an escapement and traveling-way should any accident happen to the hoisting shaft at either mine. Andrew Braidwood, superintendent; James Graham, pit boss.

LEAVENWORTH COAL COMPANY.—This mine is located on the United States reservation at Fort Leavenworth. It has railroad connections with all the railroads entering the city. It is equipped with a pair of engines—800 horse power, drum 16 feet in diameter, 2-inch steel wire hoisting ropes, attached to double-deck cages carrying four mine cars each. A new fan 25 feet in diameter with a 6-foot face has been recently erected, giving ample air for the mine. It has an escapement shaft with hoisting engine, and all equipments for withdrawing the workmen should any accident occur to the main hoisting shaft. A new automatic apparatus has been placed at the top of this mine for taking off the loaded and putting the empty cars on the cages, and a system of endless-rope distributors has also been placed here to deliver the coal to the many chutes required for the local and city trade, and also to the several chutes used for loading railroad cars on the different roads. A new system of electric haulage, pumping and mining has been introduced into this mine,

but it has not been completed far enough so that a proper description of the working and utility can be given. John E. Carr, superintendent; John Heller, pit boss.

PENITENTIARY COAL MINE.—This mine is located inside the walls of the Kansas State Penitentiary, at Lansing, Leavenworth county. It is well regulated, and everything in the finest condition from the top of the shafts to the face of the workings. The roadways are kept clear of every particle of dirt or slate, and all loose or overhanging material is immediately taken down. The air-ways are large and kept free from all obstruction. The mine is examined by competent and experienced fire bosses every morning, and reports made to the superintendent before the miners go down to their work. There is an escapement shaft, or rather there are two hoisting shafts, both of which are used daily. A fan 15 feet in diameter, of the most approved make, gives ample ventilation to every section of the workings and working faces in the mine. The whole mine may be considered a model one in every respect. Oscar F. Lamm, superintendent; Robert Lamm, pit boss.

LINCOLN COUNTY COAL MINING.

ANALYSIS.—Number shaft mines, 8; kind of coal, lignite; total output for 1890, 165,000 bushels, or .28 per cent. of total output of the State; total output for 1891, 169,200 bushels, or .24 per cent. of the total output of the State; estimated value of output: 1890, \$13,200; 1891, \$13,536; number of employés for 1891, 70.

There is no strip coal taken out in this county. Five of the eight shafts are located in the vicinity of Denmark, two near Spillman and one at Ingles. These mines as a rule are only operated in the winter months, the trade being entirely local. The coal is lignite, and the vein varies in thickness from 16 to 26 inches. The vein is wavy on top, but the bottom is level. None of the mines have railroad connections.

LINN COUNTY COAL MINING.

ANALYSIS.—Number shaft and drift mines, 9; kind of coal, bituminous; average thickness of vein, 32 inches; average depth of coal from surface, 60 feet; average number of days worked: 1890, 132, or 43 per cent. of working days; 1891, 169, or 55 per cent. of working days; total output for 1890, 787,336 bushels, or 1.30 per cent. of the total output of the State; total output for 1891, 1,359,374 bushels, or 2 per cent. of the total output of the State; estimated value of output: 1890, \$41,401; 1891, \$72,664; number of men employed, 1891, 152.

COAL MINES, LINN COUNTY.

Office number.....	NAMES OF OPERATORS.	POST-OFFICE ADDRESS.	Number of days mine worked.		Number bushels mined.		Estimated value of output.	
			1890.	1891.	1890.	1891.	1890.	1891.
1.....	Bradley & Vernon ³	Boicourt.....	.....	.....	.....	.....	.....	.....
2.....	Warren Lacy.....	La Cygne.....	130	150	31,200	36,915	\$1,716	\$2,030
3.....	T. W. Gage ¹	Orchard.....	40	100	10,425	34,850	573	1,917
4.....	Ben. Goode.....	".....	150	150	50,000	50,000	2,750	2,800
5.....	A. Vantyle ⁴	".....	110	100	13,418	10,000	737	550
6.....	Mine Creek Coal Company.....	Pleasanton.....	275	275	30,112	396,797	1,656	21,823
7.....	Pleasanton Coal Company.....	".....	240	240	135,000	220,150	7,425	12,108
8.....	A. F. Seright.....	".....	115	120	16,180	21,000	889	1,155
9.....	Southwestern Coal Company.....	Worland, Mo.....	200	218	150,000	159,662	8,105	8,781
	Strip banks.....	.....	.....	.....	351,000	430,000	17,550	21,500
	Totals and averages.....	.....	132	169	787,336	1,359,374	\$41,401	\$72,664

¹ Barron & Mobley, lessees.² We loaded the first coal October 3, 1890, and run day work.³ Shaft just opened; no report of output for 1891.⁴ Frank Phillips, lessee in 1891.

COAL MINES, LINN COUNTY—CONCLUDED.

OFFICE NUMBER.	Number kegs of powder used.		Average number employés daily—1891.				Average price paid per bushel.		Mine open- ing.
	1890.	1891.	Miners.	Boys.	Others.	Total.	Summer.	Winter.	
1.....									Shaft.
2.....	10	12	4		2	6	4½	4½	"
3.....	38	113	4		6	10	4	4	"
4.....	100	100	4	3	1	8	4	4	"
5.....	40	38	3		4	7	4	4	"
6.....	25		20		6	26	*\$2.25	*\$2.25	"
7.....	8	6	20	1	5	26	3½	3½	"
8.....	40	225	14		4	13	3½	3½	Drift.
Strip banks.....					51	51			
Totals.....	261	494	69	4	79	152			

* Per ton.

Record of Inspection.

BRADLEY & VERNON.—I visited the Bradley-Vernon coal mine, located at Boicourt, Linn county, 67 miles south of Kansas City, on a switch of the main line of the Kansas City, Fort Scott & Memphis railroad. The shaft is well equipped with a pair of hoisting engines, made by the Keystone Iron Works, of Kansas City, Mo. The engines are 12x14-inch cylinders; drum, ropes and cages in good order, and capable of hoisting 25 or 30 railroad cars of coal per day. An air shaft has been completed, and fitted with a fan 12 feet in diameter and 4 feet width of blade, capable of supplying ample ventilation for 150 workmen; the fan is driven by a 12x16-inch-cylinder engine; fan and engine were both manufactured by Cole & Co., Washington, Ind. A new Fairbanks railroad-track scale is used for weighing the coal. The mine below is in good condition; entries well driven and brushed to the face, ready for the use of mules or any other system for haulage of coal that may be adopted. The coal is bituminous, of good quality, average 34 inches in thickness, with a very small per cent. of sulphur. The coal is overlaid with a good gray-slate roof; rooms can be worked 22 or 24 feet wide. The under-clay is a soft fire clay, and makes a good mining or under-cutting for the coal, thus saving the full thickness of the vein from waste or breaking into slack. This shaft is 90 feet deep, and worked on the room-and-pillar system, with double entries.

WARREN LACY (La Cygne coal shaft).—This shaft is located on the west of the city limits of La Cygne. It is 120 feet deep, and is a horse-power plant. The coal is 34 inches thick, and is operated on the room-and-pillar system. Only a few men are employed at this time. Warren Lacy, pit boss.

T. W. GAGE.—This is a horse-power shaft, located seven miles east of La Cygne. It is ventilated by a furnace, but at my last visit was in a very poor condition, for want of communication around the bottom. The present lessees, Barron & Mobley, promised to have this remedied at an early date. This shaft has no railroad connection. J. S. Mobley, pit boss.

BEN. GOODE.—Located one-fourth of a mile southeast of Gage's, and is worked entirely by the owner's family, with very little respect to the mining law. Ben. Goode, pit boss.

VANTYLE'S SHAFT.—This mine is located about six miles east of La Cygne, near Orchard post office. It does a local business, and has no railroad connection. It has an escapement shaft, and is ventilated by a furnace. — Vantyle, pit boss.

MINE CREEK COAL COMPANY.—This mine is located two miles east of Pleasanton, on the St. Louis and Emporia division of the Missouri Pacific railway. An

escapement shaft has been completed, and the mine has recently been opened out on the long-wall system, which improvement works well. This mine has steam power and is ventilated by a furnace. I. M. Fleming, superintendent; Hugh Reed, pit boss.

PLEASANTON COAL COMPANY.—This mine is located on the main line of the Kansas City, Fort Scott & Memphis railroad, one mile north of Pleasanton. It is 90 feet deep, and is worked on the long-wall system. The vein of coal is 26 inches thick on the east side of the shaft. The ventilation is maintained by a small fan, which gave a sufficient quantity of air for those employed in the mine. A new return air-way and a new traveling-way have been almost completed. The mine is being opened out and placed in a proper condition for good ventilation. The improvements will facilitate the handling of the product of the mine. Many complaints have been heretofore made concerning the ventilation and safety of this mine, as it has been kept in very bad condition, as there was no one in charge who had a practical knowledge of how to conduct a mine. A thoroughly practical man has been recently employed, and his work is being shown by the better condition of the mine already. D. Cunningham, pit boss.

A. J. SERIGHT.—This is a horse-power plant, located $2\frac{1}{2}$ miles east of Pleasanton. It has no railroad connection, and does only a local trade. It works three or four men part of the year. An escapement shaft has been completed and is in fair condition. A 36-inch vein of coal is worked on the room and-pillar system. A. J. Seright, pit boss.

LYON COUNTY COAL MINING.

ANALYSIS.—Kind of coal, bituminous; average thickness of vein, 14 inches; total output for 1890, 86,510 bushels, or .13 per cent. of the total output of the State; output for 1891, 87,343 bushels, or .14 per cent. of the total output of the State; estimated value of output: 1890, \$6,920; 1891, \$6,987; number of men employed in 1891, 42.

No complaints have reached me from this county, nor any reports of accidents. The mining is all conducted in a small way, and the output is almost entirely consumed in local trade. At Admire City some new work is being put in. There continues to be considerable coal stripped in the vicinity of Soldier creek. The number of men employed varies from 25 to 40, owing to the season of the year.

MITCHELL COUNTY COAL MINING.

ANALYSIS.—Kind of coal, lignite; average thickness of vein, 14 inches; total output, 1890, 23,700 bushels, or .03 per cent. of the total output of the State; 1891, 26,000 bushels, or .03 per cent of the total output of the State; estimated value of output: 1890, \$1,777; 1891, \$1,950; number of employes, 1891, 20.

But little mining is done in this county, except in the winter months. The openings are all on the drift plan, and the work is performed largely by farmers and their families. The trade is entirely local. Saltville is the post-office address of the men who run the drifts in this county. More attention should be paid to ventilation and timbering. This has been promised to be done.

NEMAHA COUNTY COAL MINING.

ANALYSIS.—Kind of coal, lignite; average thickness of vein, 22 inches; average depth of coal from surface, 40 feet; total output for 1890, 55,200 bushels, or .06 per cent. of the total output of the State; output for 1891, 57,000 bushels, or .07 per cent. of the total output of the State; estimated value of output: 1890, \$6,072; 1891, \$6,270; total number employes, 1891, 30.

There are two shafts in this county. The coal is largely consumed by local trade. The town of Bern is the center of the coal field here. No complaints have reached me from this county. The coal vein is wavy, and varies in thickness from 16 to 28 inches.

OSAGE COUNTY COAL MINING.

ANALYSIS.—Number of shaft, slope and drift mines, 90; kind of coal, bituminous; average thickness of vein, 14 to 22 inches; average depth of coal from surface, 50 feet; average number of days worked: 1890, 164, or 53 per cent. of working days; 1891, 164, or 53 per cent. of working days; total output for 1890, 11,715,551 bushels, or 18.62 per cent. of the total output of the State; total output for 1891, 11,625,515 bushels, or 17.10 per cent. of the total output of the State; estimated value of output: 1890, \$974,227; 1891, \$898,810; number of employes, 1891, 2,917.

COAL MINES, OSAGE COUNTY.

Office number	NAMES OF OPERATORS.	POST-OFFICE ADDRESS.	Number of days mine worked.		Number bushels mined.		Estimated value of output.	
			1890.	1891.	1890.	1891.	1890.	1891.
1	Rees Lewis	Arvonla.....	160	185	24,640	36,600	\$2,217	\$3,294
2	John Loper	"	160	190	19,890	19,890	1,790	1,790
3	W. H. Thomas	"	165	190	16,450	118,600	1,480	9,488
4	Williams & Jones	"	125	155	17,800	18,900	1,602	1,528
5	Barclay Coal Company	Barclay	174	180	21,131	21,131	2,115	1,690
6	J. T. Scott	"	160	160	24,870	24,000	1,929	1,929
7	J. H. Burke	Burlingame	205	146	36,850	7,200	2,940	540
8	Burlingame Coal and Mining Company:	Burlingame	198	233	103,018	113,523	8,241	8,509
9	Shaft No. 1	"	176	176	63,938	5,117	5,117	5,117
10	"	"	190	239	145,220	156,939	7,617	11,770
11	"	"	140	233	55,120	136,139	4,409	10,210
12	"	"	38		12,213	977		
13	Central Coal and Mining Co.	"	130	170	60,157	71,910	4,812	5,393
14	Dragon Valley Coal Company	"	258	215	77,400	39,330	6,976	2,934
15	Fair Coal Company	"	163	2123	79,870	59,522	7,188	4,404
16	William Foster	"	140		26,639		1,732	
17	Foster & Armstrong	"	260			59,972		4,197
18	Samuel Hatfield	"	100	180	6,640	23,125	531	1,733
19	Thomas Hayson, sr.	"	61		9,400	752	752	
20	John Jack	"	102	168	55,900	50,185	4,472	3,763
21	George McMurdo	"	180	80	32,134	10,800	2,570	864
22	George Struman:	Burlingame	153	159	92,984	103,673	7,434	7,775
23	Shaft No. 1	"	80			22,375		1,678
24	Joseph Tribune	"	100	140	8,625	12,196	690	914
25	Richard Underwood	"	152	169	4,188	6,909	375	518
26	Thos. Whitcomb	"	280	120	16,200	12,000	1,245	900
27	And. Young & Son	"	206	24	37,900	4,100	3,032	307
28	James Zucca & Co.	"	185	168	188,725	297,946	15,798	16,845
29	Samuel Noble	Carbondale	70		8,700		696	
30	Terrill N. Thomas	"	220	210	49,600	20,009	3,968	1,800
31	William H. Thomas	"	226	226	109,700	109,942	8,776	9,884
32	Christianson Bros. & Co.	Osage City	130	130		60,485		4,838
33	Enterprise Coal and Mining Company.	"	98	340	98,760	39,836	7,900	3,186
34	A. B. Gramstrom:	Osage City	190	220	126,924	190,715	9,489	15,275
35	Shaft No. 2	"	38			18,200		1,506
36	"	"	160			36,000		2,880
37	John Hershby	"	199	189	210,412	273,450	16,836	21,876

¹ For January and February, 1891.² For eight months.³ Two months only.

COAL MINES, OSAGE COUNTY—CONTINUED.

Office number.....	NAMES OF OPERATORS.	POST OFFICE ADDRESS.		Number of days mine worked.		Number bushels mined.		Estimated value of output.	
		1890.	1891.	1890.	1891.	1890.	1891.	1890.	1891.
38.....	John Jack.....								
39.....	John A. Johnson.....		116			38,425			\$3,073
40.....	Melvorn & Hunt.....		75			30,000			2,400
41.....	Norwegian Coal Company.....		94			14,320			1,145
42.....	Osage Carbon Company: ¹	186	135			55,350		\$5,618	4,428
43.....	Shaft No. 15.....								
44.....	" 17.....	124		22,925			2,062		
45.....	" 18.....	115	218	204,850		363,025		18,436	29,041
46.....	" 20.....	295	179	113,325		252,450		20,196	20,196
47.....	" 21.....	283	87	184,275		161,400		16,584	12,912
48.....	" 22.....	3186		286,725				25,804	
49.....	" 23.....	4110	87	178,425		148,600		16,057	11,888
50.....	" 24.....	251	149	951,600		85,614		85,614	39,861
51.....	" 25.....	256	206	856,450		607,075		77,080	48,565
52.....	" 27.....	260	206	609,125		480,625		54,820	34,449
53.....	Pittsburg Coal and Mining Company.....	227	20	21,375		22,175		1,923	1,773
54.....	Dennis Ryan.....	250	245	40,920		77,445		3,273	6,195
55.....	Ryan & Whalen.....	106		21,300				1,704	
56.....	Scandinavian Coal and Mining Company.....	215	199	42,320		51,780		3,385	
57.....	William Shums.....	202		147,100				11,768	
58.....	Superior Coal and Mining Company: ²	190	208	39,860		49,920		2,989	3,993
59.....	Shaft No. 4.....								
60.....	" 5.....	210	100	153,700		72,500		13,296	5,800
61.....	Swedish Coal and Mining Company.....	206	160	99,360		99,360		10,234	7,948
62.....	Matthew Waddell.....	160		127,926		25,280			2,022
63.....	Thos. Watson.....	218	220			80,425		6,322	6,452
64.....	Western Fuel Company.....		94	79,025					740
65.....	Whalen & Darby.....	200	190	536,415		596,809		42,913	48,744
66.....	W. T. Williams.....	183	30	25,000		7,210		2,000	576
67.....	Coughlin Bros.....	250	260	40,920		93,750		3,272	7,500
68.....	Osage Carbon Company: ³	205	198	56,500		59,830		4,370	4,786
69.....	Shaft No. 9.....								
70.....	" 19.....	303	302	500,800		408,050		40,064	32,644
71.....	Peterson Coal and Mining Company.....	823		26,325				2,105	
72.....	Scandinavian Coal and Mining Company.....	9101	211	137,625		216,350		11,009	17,308
73.....	W. C. Barred.....	92	40	34,780		8,500		2,782	680
74.....	Quenemo.....	201	183	198,643		205,775		15,891	16,461
75.....		108	148	11,980		18,635		1,198	1,863

¹ January and part of February.² Worked 4½ months during year 1890.³ Worked nine months during year 1890.⁴ Worked 5½ months during 1890.⁵ Idle 17 days in March.⁶ Worked 1½ months during year 1890.⁷ Robt. Craig is superintendent of all carbon company mines operated in Osage county.⁸ Worked one month during 1890.⁹ Worked five months during 1890.

COAL MINES, OSAGE COUNTY—CONTINUED.

Office number	NAMES OF OPERATORS.	POST-OFFICE ADDRESS.	Number of days mine worked.		Number bushels mined.		Estimated value of output.	
			1890.	1891.	1890.	1891.	1890.	1891.
74	John Boyle.....	Quenemo.....	120	155	10,570	14,200	\$1,057	\$1,420
75	William Carter.....	"	100	180	6,950	11,870	695	1,187
76	Isaac Claypoole.....	"	160	164	5,760	15,340	576	1,534
77	John Grant.....	"	175	175	16,465	15,230	1,646	1,523
78	Amos Herrington.....	"	140	149	5,045	8,460	504	846
79	Fred. Herrington.....	"	130	143	19,126	17,950	1,912	1,795
80	Thos. Liston.....	"	180	190	22,680	16,400	2,268	1,640
81	A. C. Mason.....	"	275	215	42,458	47,620	4,645	4,762
82	John Rable.....	"	184	184	32,360	32,360	3,236	3,236
83	Edward Scott.....	"	240	215	43,200	44,350	4,320	4,435
84	M. B. Smedley.....	"	240	220	9,650	7,320	965	732
85	C. B. Smith.....	"	170	191	20,400	15,840	2,040	1,584
86	James Tarbetts.....	"	180	184	8,650	11,400	865	1,140
87	T. M. Thornbrow.....	"	155	165	8,370	10,365	837	1,036
88	W. M. Walters.....	"	250	206	73,200	81,946	7,310	8,149
89	William Westwood.....	"	240	210	31,685	28,440	3,169	2,844
90	William Whicher.....	"	250	210	22,180	37,794	2,218	3,779
91	Joe Rable.....	Rosemont.....	170	176	38,586	16,650	3,858	1,650
92	Thos. Adams.....	Scranton.....	180	200	33,460	300,000	2,676	2,400
93	E. L. Bros.....	"	210	200	296,850	300,000	22,265	24,000
94	Thos. Chappell: Shaft No. 1.....	Scranton.....	210	228	309,024	302,281	22,426	22,671
95	" " 2.....	"	46	46	36,201	36,201	2,715	2,715
96	Elliott & Burton.....	"	133	133	183,890	183,890	13,791	13,791
97	Gus. Hoppkins.....	"	110	166	16,220	21,650	1,296	1,629
98	Industrial Coal and Mining Company.....	"	205	131	166,181	142,447	11,294	10,683
99	Henry Isaacs.....	"	200	205	1300,000	1350,000	24,000	26,250
100	Osage Carbon Company: ² Shaft No. 6.....	Scranton.....	19	19	17,000	416,750	1,360	41,588
101	" " 10.....	"	240	192	519,850	416,750	41,588	29,172
102	" " 11.....	"	240	95	48,975	163,275	3,917	11,438
103	" " 12.....	"	190	192	830,800	700,325	68,064	49,022
104	" " 13.....	"	14	14	16,225	16,225	1,297	1,297
105	Pat. Ryan & Co.....	"	210	250	245,660	274,108	19,652	20,498
106	Thos. Turvey.....	"	212	212	36,720	36,720	2,937	2,937
	Strip banks.....	"			956,390	1,432,882	77,782	101,789
	Totals and averages.....		164	164	11,715,551	11,625,515	\$974,227	\$898,810

¹ Shafts Nos. 4 and 5. ² Robert Craig is superintendent of all Carbon Company mines operated in this county.

COAL MINES, OSAGE COUNTY—CONTINUED.

OFFICE NUMBER.	Number kegs of powder used.		Average number employés daily—1891.				Average price paid per bushel.		Mine open- ing.
	1890.	1891.	Miners.	Boys.	Others.	Total.	Summer.	Winter.	
1.....			4		2	6		6	Drift.
2.....			4	1	1	6		7	"
3.....			23		1	24		6	"
4.....			3		1	4		6	"
5.....			4	1	1	5		6	Shaft.
6.....			5		2	7		6	"
7.....			5	1	2	8		5	"
8.....	20	20	14	3	3	20		5	"
9.....	10								"
10.....	25	25	20	4	4	28		5	"
11.....	25	25	21	3	4	28		5	"
12.....	1	2	18	1	4	23		5	"
13.....			9		2	11		5	"
14.....	5	3	14		3	17		5 ⁷ / ₁₀	"
15.....			15		4	19		5	"
16.....			5	1	1	7		6	Drift.
17.....	3	1	12	2	3	17		5 ¹ / ₂	"
18.....			3	1	1	5		6	"
19.....	2	2	21		3	24		5	Shaft.
20.....			8		2	10		5 ³ / ₅	"
21.....			7		2	9		6	"
22.....	4	3	3		1	4		5 ¹ / ₂	"
23.....			4			4		6	"
24.....			8	1	2	11		5	Shaft.
25.....			28		2	30		5 ¹ / ₂	"
26.....			2		1	3		5 ¹ / ₂	Slope.
27.....			20		4	24		4 ³ / ₅	Shaft.
28.....			24	1	2	27		6	"
29.....	3		35		3	38		6 ² / ₅	Shaft.
30.....	5		32		2	34		6 ¹ / ₂	"
31.....			16		2	18		6 ¹ / ₂	"
32.....			9		2	11		6 ¹ / ₂	"
33.....	4	1	200		3	203		6	"
34.....			10	1	2	13	5	6	"
35.....			12		2	14		6 ¹ / ₂	"
36.....			6		2	8		6	Drift.
37.....	2		15		2	17		6 ¹ / ₂	Shaft.
38.....			53	5	2	60		6	"
39.....			56	7	2	65		6	"
40.....			67	6	3	76		6	"
41.....			57	7	2	66		6	"
42.....			108	8	5	121		6	"
43.....			102	25	5	132		6	"
44.....			79	9	5	93		6	"
45.....			53	3	2	58		6	"
46.....			13	2	2	17		6	"
47.....	1								"
48.....		2	6	2	2	10		6	"
49.....	1								"
50.....			10	1	2	13		6	"
51.....			19	1	2	22		6	Shaft.
52.....	24	10	19	1	2	22		6	"
53.....	2	2	24	1	2	27		6	"
54.....			6		1	7		6 ¹ / ₅	Drift.
55.....		4	14	1	2	17		6	"
56.....			4		1	5		6	Drift.
57.....			178		8	186		6	Shaft.
58.....	2		6		1	7		6	Drift.
59.....			15	2	2	19		6 ¹ / ₂	"
60.....			13		2	15			"
61.....			61	21	7	89		6	Shaft.
62.....			40	8	2	50		6	"
63.....	6		8		2	10		6	"
64.....			33		3	36		6	"
65.....			4	1	1	6		7	Drift.
66.....			3			4		7	"
67.....			3		1	4		7	"
68.....			3		1	4		7	"
69.....			3		1	4		7	"
70.....	1		4		1	5		7	"
71.....	2		4		1	5		7	"
72.....			5	1	2	8		7	"
73.....	2	3	5		2	7		7	"
74.....			3			5		7	"

¹ 40 pounds dynamite.
⁵ 500 pounds dynamite.² 30 pounds dynamite.
⁶ 300 pounds dynamite.³ 100 pounds dynamite.
⁷ 200 pounds dynamite.⁴ 50 pounds dynamite.

COAL MINES, OSAGE COUNTY—CONCLUDED.

OFFICE NUMBER.	Number kegs of powder used.		Average number employes daily—1891.				Average price paid per bushel.		Mine open- ing.
	1890.	1891.	Miners.	Boys.	Others.	Total.	Summer.	Winter.	
83.....	4	3	6	1	1	8		7	Drift.
84.....			2			2		7	"
85.....			4	1	1	6		7	"
86.....		1	3		1	4		7	"
87.....			3			3		7	"
88.....	6	2	10	1	2	13		7	"
89.....	3	1	5	1	1	7		7	"
90.....			5	1	1	7		7	"
91.....	1								
92.....			4		1	5		6	
93.....			30		6	36		5 $\frac{1}{2}$	Shaft.
94.....			40	3	5	48		5 $\frac{1}{2}$	"
95.....			46	4	4	54		5	"
96.....			40	1	5	46		5	
97.....			5		1	6		6 $\frac{1}{2}$	
98.....			31	4	4	39		5	
99.....			47	4	4	55		4 $\frac{1}{2}$	Shaft.
101.....			68	9	6	83		4 $\frac{1}{2}$	"
102.....			26	5	8	39		4 $\frac{1}{2}$	"
103.....			107	12	7	126		4 $\frac{1}{2}$	"
105.....			40	5	5	50		4 $\frac{1}{2}$	"
Strip banks.....					292	292			
Totals.....	164	117	2,323	183	511	3,017			

Record of Inspection.

There have been but few complaints from this county, but two-thirds of those received have been well founded, and the operators at once saw that their pit bosses had the necessary improvements made. There is a general willingness to obey the law, and to see all the different sections enforced, except it be in some of the smaller mines.

The only difficulty in this vein of coal is drainage. The workings are so low and level, and the strata or under-clay in which dams have to be cut is so porous, that drainage in these workings is rather difficult.

Section 17 (the educational section) of the mining law has been somewhat of a bugbear to get into successful operation. My predecessors apparently took little or no notice of it in this county, and I had some uphill work to do to get the boys between the ages of 12 and 16 years to attend three months at school. These difficulties I overcame, and now I have no trouble, as the boys and their parents have learned that the law says: "They [the boys] must attend school 60 days."

Heretofore it has been the custom to keep the powder or dynamite for use in the mines in the weigh office, which as a rule is a very small room. It is not a safe place to keep such explosives. There are continually men going in and out with lighted lamps on their heads. These offices are generally overhead, at the exit of the mines. At No. 26 shaft, Carbon Coal Company, Peterton, the roof of the weigh office took fire, and several pounds of dynamite and some powder were in the office at the time. Several men were on top and speedily got onto the roof and put out the fire. But for their prompt action, an explosion that would have ruined the shaft, and, perhaps, caused a considerable loss of life, would have occurred. The practice of storing powder in this weigh office has been discontinued.

The cases of Ryan & Co., Scranton, and Christianson & Co., Osage City, show the necessity of the mines being regularly surveyed and platted. Ryan & Co. were obliged to expend nearly \$1,000 for their experience, and Christianson & Co. came very near sacrificing life; had there been any one in the shaft it would have been almost impossible for them to have gotten out before the water overtook them.

Condition of Mines.

SAMUEL NOBLE.—This slope is located three-fourths of a mile from the A. T. & S. F. railroad, east of Carbondale, and was abandoned in 1891, as it was worked out.

TERRILL M. THOMAS.—This slope has no railroad connection, and does a local trade. It has two openings—one by entry, driven through on old strippings and hoisting slope. This mine stopped working in the spring of 1891, through the heavy rains.

WILLIAM. H. THOMAS.—This shaft is located $1\frac{3}{4}$ miles southeast of Carbondale, on the Lawrence & Carbondale railroad. Does a shipping trade. Has three openings—one by entry driven through on old strippings for men to travel to and from work, one furnace shaft, and one hoisting shaft. Air good. Roads not in good condition. When it rains, water gets in very bad, and it is hard to secure good drainage. The above mine (and in fact all the mines that are around Carbondale) is hard to drain, as the coal is so shallow and the bed-rock thin. The top breaks every fall of coal that is worked out, which leaves crevices for the water to work in from the surface when it rains. Will. H. Thomas, superintendent; Charles Shively, pit boss.

INDUSTRIAL COAL AND MINING COMPANY.—This mine is located in Scranton, and has a switch from the A. T. & S. F. railroad. Does a shipping trade. It is now operated by Mr. Thomas Chappell. He is making considerable improvement by timbering and making the bottom larger. He has drained the bottom to a wind-mill in the escapement shaft, and is timbering the shaft anew. Thomas Chappell, superintendent; John Allan, pit boss.

THOMAS CHAPPELL.—This shaft is located about one mile northwest of Scranton, and has a switch from A. T. & S. F. railroad. It has three openings—one for men going to and from work, one furnace shaft, and one for hoisting. It does a shipping business. Ventilation and roads are in good condition. No improvements since my last report, except that the roads have been brushed for the use of mules. The proprietor has leased another 40 acres of coal land to the west of the present 40 acres. Thomas Chappell, superintendent; James Chappell, pit boss.

BELL BROS.—This mine is located one-half mile north of Scranton; has switch from A. T. & S. F. railroad, and does a local and shipping business. It has three openings; the air and roads are in good condition. It is being operated by Messrs. Elliott & Benton. Robert Elliott, superintendent; Robert Benton, pit boss.

PAT. RYAN & Co.—This mine is located one mile east of Scranton, and has railroad connection with the A. T. & S. F. Does a shipping trade. It has two openings. There has been considerable trouble at this mine through mining into the old workings of No. 6 shaft—Carbon Coal Company. In the first place they got black damp, and when the spring rains of 1891 came, the water backed onto them from No. 6, and the result was that they came near losing all their work. It kept three men night and day hauling water. A shaft was sunk and a pump put into it, which had but little effect. Later, they put a drift into the workings of No. 6 shaft, from an old stripping, which proved effective. Pat. Ryan, superintendent; Thomas Ellwood, pit boss.

HENRY ISAACS.—Mine No. 4. This mine is located in Scranton, and has railroad connection with the A. T. & S. F. Does a shipping business. It has four openings—one for pumping, one for furnace, one for men traveling to and from work, and one for hoisting coal. This mine has been kept in good condition; no improvements. James Ingam, pit boss.

Mine No. 5. This mine is located two miles south from Scranton; has a switch

from A. T. & S. F. railroad, and does a local and shipping trade. This mine is in good condition, and has two openings. Henry Isaacs, superintendent and pit boss.

THOMAS TURVEY.—This mine was located $1\frac{1}{2}$ miles east of Scranton, but was abandoned in 1891.

CARBON COAL COMPANY.*—Mine No. 6. This mine was located one mile east of Scranton, and was abandoned in 1891.

Mine No. 9. This mine, located at Peterton, on the east side of the A. T. & S. F. railroad, does a shipping trade. Chutes are built here for coaling the locomotive engines on the railroad, and this mine supplies coal for these chutes. It has four openings—two for furnaces, one for escapement, and one for hoisting coal. The sinking of another shaft at the extremity of the workings has considerably improved the ventilation and safety of this mine. The roads are in good order. John Craig, pit boss.

Mine No. 10. This mine is located in Scranton, and has a switch connecting with the main line of the A. T. & S. F. railroad. Does a shipping trade. It has two openings, and is ventilated by furnace. Has four currents of air, with overcast near bottom of shaft. Both air and roads are in good condition. Archibald Kirkwood, pit boss.

Mine No. 11. This mine is located in Scranton, and has railroad connection with the main line of the Atchison, Topeka & Santa Fé. On account of water, this shaft was abandoned in 1891, and the air and main shafts have been filled in.

Mine No. 12. This mine is located northwest of Scranton; has railroad connection with main line of the A. T. & S. F. railroad. Does a shipping business. Has two openings, and is ventilated by furnace. Has four currents of air, with an overcast near bottom of shaft. This mine is in first-class condition. This shaft gives the largest output of coal in Scranton. John Kirkwood, pit boss.

Mine No. 13. This mine is located one mile southeast of Scranton, and on a switch of the main line of the A. T. & S. F. railroad. No work has been done here since my last report, owing to thin coal and hard mining.

Mine No. 15. Located one mile south of Osage City, and has railroad connections with the A. T. & S. F. railroad. Does entirely a shipping business. It has three openings, and is ventilated by furnace. The mine is in fair condition. Very little work has been done in this mine. The mine did not happen to be working when I was visiting the mines. Archibald Craig, pit boss.

Mine No. 17. Located in Osage City; has switch from A. T. & S. F. railroad. Does a shipping trade. It has two openings. Ventilation and roads are in good condition. Peter Marchett, pit boss.

Mine No. 18. Located in Osage City, and has connection with the A. T. & S. F. railroad. This shaft has been abandoned.

Mine No. 19. This mine is located in Peterton, about one-fourth of a mile east of the depot. No work has been done at this mine since my last report.

Mine No. 20. Located in Osage City, about one-half mile northeast of the depot, on the A. T. & S. F. railroad, and has connection with same. Is ventilated by furnace, and has four currents of air, with air overcast near bottom of shaft. Does a shipping business. This mine is in fair condition, considering the time the mine was not working during the summer of 1891. Val. Amid, pit boss.

Mine No. 21. This mine is located east of Osage City, and has railroad connection with the main line of the A. T. & S. F. railroad. This mine was abandoned September 1, 1891.

* Robert Craig is superintendent of all mines operated by the Carbon Coal Company in this county.

Mine No. 22. This mine is located in the vicinity of Osage City, with railroad connection with the A. T. & S. F. railroad. Does a shipping trade. It has two openings, and is ventilated by furnace, and has three currents of air—two currents on west side and one current on east side of shaft. Ventilation good; but roads muddy with water hauling over them. The miners employed in this mine are principally colored men—the mine being reserved by the company for this class of workmen. It has worked very little during 1891. James Main, pit boss.

Mine No. 23. This mine is located in the vicinity of Osage City, with switch from the main line of the A. T. & S. F. railroad. Does a shipping trade. Has two openings, and is ventilated by furnace. Has four currents of air, with air undercast near bottom of shaft. Condition of mine, fair. Edward Roberts, pit boss.

Mine No. 24. This mine is located one-half mile northeast of Osage City, and has switch connections with A. T. & S. F. railroad. Does a local business. Has two openings, and is ventilated by furnace, and has also four currents of air, with air undercast near bottom of shaft. This mine is in good condition. William Waddell, pit boss.

Mine No. 25. This mine is located east of Osage City, and has a switch from the A. T. & S. F. railroad. Does a local business. Is ventilated by a furnace, and has two currents of air. Has three openings. This mine has considerable water, and the roads on the east side of the shaft are muddy; otherwise, the mine is kept in good working order. Samuel Hughes, pit boss.

Mine No. 26. This mine is located in Peterton, on east side of A. T. & S. F. railroad, and has switch from same road. Does entirely a shipping business. Has two openings. Has four currents of air, with overcast near bottom of shaft. Ventilation and roads good. John St. John, pit boss.

Mine No. 27. This mine is located one-half mile southeast of Osage City, and has switch connection with A. T. & S. F. railroad. It does a shipping business. It is ventilated by furnace, and has four currents of air, with undercast on south side, near the bottom of shaft. This mine, when working, has always been in good condition. Edward Cliff, pit boss.

FOSTER & ARMSTRONG.—This mine is located two miles east of Burlingame, south of the A. T. & S. F. railroad. This shaft was put down in the beginning of 1889. They have got the second opening completed, and have a switch connection with the railroad. They do a shipping business, and the mine is in fair working order. I. Armstrong, superintendent.

ANDREW YOUNG & SONS.—This shaft is located one-quarter mile east of Burlingame; has a switch from the main line of the A. T. & S. F. railroad. Does a shipping trade. The mine has two openings, and is ventilated by a furnace. Very little has been done in this mine since my last report. A. Young, jr., pit boss.

JOHN JACK.—This shaft is located in Burlingame, on north side of A. T. & S. F. railroad. This mine has been abandoned.

GEORGE STRUMAN.—This shaft is located in Burlingame fair grounds, on the east side of A. T. & S. F. railroad; has no switch. It does a local and shipping business. When shipping, has to haul coal one-fourth of a mile. There is considerable water in this mine; it comes mostly from the strata in the two shafts. Mr. Struman has put in a horse pump, but it is not able to keep the water out; has still to haul some up in boxes. The mine is in good working order. This mine has two openings. George Struman, pit boss.

CENTRAL COAL AND MINING COMPANY.—This shaft is located one-half mile east of Burlingame, and has a local and shipping trade. When shipping, has to haul coal one-half mile. This mine has two openings, and is ventilated by furnace.

The ventilation and general condition of mine is good, and it is perfectly dry. Albert Cole, pit boss.

FAIR COAL COMPANY.—This shaft is located one-half mile east of Burlingame, and does a local and shipping business. When shipping, has to haul coal one half mile. Has two openings, and is ventilated by furnace. The mine was worked part of the time by George Struman & Bro. Ventilation good. Roads in poor order. It is at present being operated by John Jack, who is making some improvements.

BURLINGAME COAL AND MINING COMPANY.—Mines Nos. 1 and 4; located east of the depot of the A. T. & S. F. railroad at Burlingame; have railroad connection and do a shipping trade. The two are working through on each other, and the same ventilating-furnace power ventilates both mines. Each has a separate hoisting shaft. The furnace shaft has made a great improvement in the ventilation of both mines. These mines are in fair condition. Frank Hoyler, pit boss No. 1 shaft; James Ray, pit boss No. 4 shaft.

Shaft No. 2. This mine is located three-fourths of a mile south of Burlingame depot of the A. T. & S. F. railroad, and has switch with same. Does a shipping business. Has two openings, and is ventilated by furnace. Ventilation, etc., in fair condition. This mine was not in operation the last two visits I made.

Shaft No. 3. This mine is located half-mile south of the Burlingame depot of the A. T. & S. F. railroad, and has switch from same railroad. Does a local and shipping trade. Has two openings. Ventilation and roads in good condition. This shaft has been shut down most of the year. George Derringer, pit boss.

Shaft No. 5. This mine is located one mile east of Burlingame, on south side of the A. T. & S. F. railroad. It has railroad connection with same. Does a shipping trade when working. This shaft has done nothing since my last report.

J. H. BURKE.—This shaft is located three-fourths of a mile east of Burlingame, and is leased by George Foster. Does a local and shipping business. When shipping coal, it has to be hauled three-fourths of a mile. It has two openings, and is ventilated by furnace. Ventilation good. Roads in very bad order. This shaft is perfectly dry, and is now being operated by John Jack, who has retimbered the opening of the shaft.

A. FERNIE & Co.—This mine is located on the lands of Max Buek, two and one-half miles southeast of Burlingame, and has been abandoned.

JOSEPH TRIBUNE.—This shaft is located three miles southeast of Burlingame. This mine does a local and shipping trade. They haul coal one mile to Jas. Zucca & Co.'s switch. It has been sold, and is now operated by the Turner Coal Company. A second opening has been put down. Roads are muddy. Ventilation fair. Robert Turner, superintendent and pit boss.

JAMES ZUCCA & Co.—This mine is located two miles south of Burlingame, on the west side of the A. T. & S. F. railroad, and has switch connection with the same. It is owned by Charles Wood, but at present is leased and operated by Mr. Zucca. It does a local and shipping business. It has two openings, and is ventilated by furnace. Ventilation, etc., is in good condition. James Zucca, superintendent and pit boss.

DRAGOON VALLEY COAL COMPANY.—This mine is located two miles south of Burlingame, on the east side of the A. T. & S. F. railroad. It is owned by Thomas Hayson, sr., and is leased and operated by the above company, but has been shut down, and the railroad switch taken away. There is plenty of good coal to work in it yet.

RICHARD UNDERWOOD.—This shaft is located $1\frac{1}{2}$ miles south of Burlingame, and does a local business. Has two openings. Ventilation, etc., in fair order.

COUGHLAN BROS.—Mine No. 2. This mine is located three-fourths of a mile northeast of the Peterton depot, on the A. T. & S. F. railroad; has no railroad connection. Does a local and shipping business. When shipping, has to haul coal three fourths of a mile. Has two openings, and is ventilated by furnace. This mine is in fair condition, but roads are wet and muddy. Ventilation good. John Coughlan, superintendent.

PETERTON COAL AND MINING COMPANY.—Mine No. 2. This mine is located one mile northeast from Peterton depot, and has been abandoned.

SCANDINAVIAN COAL AND MINING COMPANY.—Mine No. 2. Located one-half mile from Peterton depot, on the A. T. & S. F. railroad. Does a local and shipping trade. It has two openings, and is ventilated by furnace. This mine is a difficult one to keep. The top is soft and wet. It is in fair working order, considering the many drawbacks it has. They are running the mines nearly every day. Ventilation fair. Robt. Craig, superintendent; Chas. Anderson, pit boss.

Mines No. 4 and 5. These mines are located south of Osage City, and have been abandoned.

MATTHEW WADDELL.—This shaft is located north of Osage City, and has no railroad connections. It does a local and shipping business. Ships coal over the Mo. Pac. railway, by hauling it a distance of 800 yards, and can ship over the A. T. & S. F. railroad, by hauling a distance of one-fourth of a mile. Has two openings, and is ventilated by furnace. This mine is in good working order. No improvements. Robt. Waddell, pit boss.

PITTSBURG COAL AND MINING COMPANY.—This mine is located one mile west of Osage City, and has railroad connections with the Mo. Pac. railway. It has two openings, and is ventilated by furnace. This mine has been operated this year by Messrs. Christianson & Co., and is in fair condition. John Christianson, pit boss.

NORWEGIAN COAL COMPANY.—This shaft is located one-fourth of a mile west of Osage City. It does a local and shipping business. Ships coal on both the A. T. & S. F. railroad and the Mo. Pac. railway. The mine is ventilated by furnace, and has two openings. Ventilation and roads in fair condition. This mine is now operated by the Western Fuel Company, and is their No. 7 shaft. The mine is in good working order. Has got a switch off the Mo. Pac. railway. Peter Berglea, pit boss.

SUPERIOR COAL AND MINING COMPANY.—Mine No. 2. This mine is located in the vicinity of Osage City, and has been abandoned.

Mine No. 4. Is located in the vicinity of Osage City, and has no railroad connections. Does a local and shipping business. Has to haul one-half mile when shipping coal. It has two openings, and is ventilated by furnace. Ventilation and roads good. This mine is in fair working condition. It is now operated by A. B. Granstrom, the mine having been sold to him. A. B. Granstrom, superintendent and pit boss.

DENNIS RYAN.—This slope mine is located one mile southeast of Osage City, and is at present shut down.

SAMUEL HATFIELD.—This drift is located about one mile east of Burlingame. Does entirely a local trade. The men push out all coal. Is only worked a few months in winter by farmers' sons and laborers. The roads are muddy and wet, and ventilation not very good.

GRANSTROM.—This shaft mine is located in Osage City, and was formerly operated by W. T. Williams, and is now worked out and abandoned.

ENTERPRISE COAL AND MINING COMPANY.—Located one mile northeast of Osage City; has railroad connections by switch with the Lyndon branch of the A. T. & S. F.

railroad. It does a shipping business. Has two openings, and is ventilated by furnace, and has two currents of air. The above mine has changed hands several times, and is at present being run by a company of Swedes, all workmen, under the name of the Enterprise Coal and Mining Company. The mine is very wet, and the water is all to wheel to the bottom, which make the roads dirty and muddy. Ventilation fair. L. Askland, pit boss.

WESTERN FUEL COMPANY.—The Western Coal Company, with two mines, and the Excelsior Coal Company, with two mines, consolidated, hence the name—the Western Fuel Company. This company now owns and operates seven shafts, which are all well equipped, having substantial pit-head frames and hoisting apparatus, with gins covered over, and railroad switches to all of them. The mines are as follows:

Shaft No. 1. This mine is located in Osage City, on east side of A. T. & S. F. railroad, and has a switch from same. It has two openings, and is ventilated by furnace. Does a local and shipping trade. This mine is in good working order. Gust. Johnson, superintendent; Turner Grovenor, pit boss.

Mines Nos. 2 and 3. These shafts are located $1\frac{1}{2}$ miles east of Osage City. No. 2 is located on the Missouri Pacific railway, and has railroad connection with same. No. 3 shaft is situated on the north side of the Lyndon branch of the A. T. & S. F. railroad, and has a switch therefrom. The coal is all hoisted out of No. 3 shaft. Each shaft has two openings, and is ventilated by furnace. The ventilation and roads are in good condition, and the mine in good working order. No improvements have been made. William Jenkins, pit boss.

Mine No. 4. Located one mile east of Osage City. This mine has not been in operation for about six months this year, and the Mo. Pac. railway switch has been taken up. When work is resumed, connection will be made with the A. T. & S. F. railroad. William Simms, pit boss.

Mine No. 5. This mine is located about one mile east of Osage City. Has switch from the Lyndon branch of the A. T. & S. F. railroad. It does a shipping trade. Has two openings, and is ventilated by furnace. This mine is in good working order. E. Batchelor, pit boss.

No. 6 shaft. This is a new mine, located in Osage City, on the land of Hobbs & Marshall. Has a switch off the Mo. Pac. railway. Does a shipping trade. Has two openings, and is ventilated by furnace, with two currents of air. This mine is dry, and in fair condition. Wm. Simms, pit boss.

No. 7. shaft. Is the Norwegian mine, of which mention was previously made.

JOHN HERSHEY.—This shaft is located about $1\frac{1}{2}$ miles east of Osage City, on the Mo. Pac. railway, and has switch from same. Does a shipping trade. Has two openings, and is ventilated by furnace. This mine is in fair condition. William Knoll, pit boss.

JOHN T. SCOTT.—This shaft is located on the land of W. T. Scott, three miles east of Barclay, and has no railroad connection. Does a local and shipping trade. When shipping coal, it has to be hauled about one mile to cars on the A. T. & S. F. railroad. It has two openings, and is ventilated by furnace. Ventilation and roads in fair order. This mine has been in operation but a few months. It was operated by a company of colored men, with John Hoard, superintendent and pit boss.

REES LEWIS.—This drift is located on Coal creek, about three miles southwest of Arvon. Does a local business, and only works during the winter months. Rees Lewis, superintendent.

W. H. THOMAS.—This drift mine is located on Coal creek, about $3\frac{1}{2}$ miles southwest of Arvon. Does a local business during the winter months, and is principally worked by farmers. Condition of mine, good. W. H. Thomas, superintendent.

THOMAS WHITCOMB.—This shaft is located on the north side of the A. T. & S. F. railroad, on the land of Thomas Whitcomb, about $2\frac{1}{2}$ miles northeast of Burlingame. Does a local and shipping business. It has one opening and is ventilated by furnace. Ventilation and roads in good order. Thomas Whitcomb, superintendent and pit boss.

SUNFLOWER COAL COMPANY.—This shaft is located one mile east of Osage City, on Mr. Morrison's land. Does a local trade. Has two openings, and is ventilated by furnace. Ventilation and roads fair. Wm. Simms, superintendent; I. I. Briggs, pit boss.

CHRISTIANSON BROS. & Co.—This shaft is located in Osage City, on the land of John Gray. It did a local shipping trade, hauling coal to the A. T. & S. F. railroad, one-fourth of a mile. Has two openings. This shaft was drowned out with water, by mining through into old work. Chas. Mangerson, pit boss.

JOHN A. JOHNSON.—This shaft is located one-half mile south of Osage City. It did a local and shipping trade, hauling coal to A. T. & S. F. railroad, a distance of one-half mile. It has one opening. It was sunk and operated by Mr. Johnson, who afterward sold out to A. B. Granstrom, who operated it until beat off by water, there being no solid bed-rock. No work has been done since. Chas. Nolan, pit boss.

SWEDISH COAL AND MINING COMPANY.—This is a drift on the south bank of Salt creek, operated by a company of miners. It does a local and shipping trade. It has two openings, and ventilated by furnace. Ventilation fair. Roads muddy and wet. ——— Rosenquest, superintendent; Chas. Roddell, pit boss.

RYAN & WHALEN.—This is a drift mine, one mile southeast of Osage City. It does a local and shipping trade. It has two openings, and is ventilated by furnace. Ventilation good. Roads wet and muddy. Thos. Whalen, superintendent and pit boss.

GEORGE LEITH.—This shaft is located two miles south and one mile west of Burlingame. When I visited this mine, they had the coal shaft 70 feet deep, $10 \times 5\frac{1}{2}$ feet; coal, 17 inches; will do a local trade.

Minor Drift Operators.

The names and addresses of the other operators of drifts in this county are as follows:

John Rable, Rosemont; James Mitchell, Edward Scott, F. M. Thornburgh, William Westwood, C. B. Smith, John Rice, John Boyle, Amos Herrington, A. S. Mason, Isaac Claypoole, William C. Barrett, William Whicher, and Isaac Jones, Quenemo. These drifts are all located in a radius of $1\frac{1}{2}$ miles, and about three to four miles from Quenemo. They are worked in the face of hills, around little spurs of creeks and ravines that run into the Marais des Cygnes river. They all have a local trade, and are only worked in the winter months. They have only the drift opening, and scarcely any of them are ever driven more than 100 to 150 feet. They are generally worked as far as they can get air and then left, or if one happens to cave in they open out another. They are all one-horse affairs. There are also a considerable number of strippings around Arvonja. These strippings are all worked by farmers in the winter months. The depth of the vein of coal is from 8 to 12 feet from surface, and in several places there is no bed-rock—nothing but the surface and soapstone.

The above is about how the small drifts stand. Of course, there are some changes in the parties operating, but the operations and ways of working are still much the same, with a slight increase in number of drifts.

REPUBLIC COUNTY COAL MINING.

ANALYSIS.—Average thickness of vein, 20 inches; kind of coal, lignite; average depth of coal from surface, 80 feet; total output of coal: 1890, 20,000 bushels, or .03 per cent. of the total output of the State; 1891, 26,410 bushels, or .04 per cent. of the total output of the State; estimated value of output: 1890, \$1,800; 1891, \$2,376; number of employés, 1891, 15.

There are two shafts in this county, one at Scandia and one at Minersville. They are reported as in good condition, and a fair prospect of an increased output. The Minersville mine is being almost entirely worked on the east side, the west having been worked out. The east side is timbered in a substantial manner, and the mine is equipped with a good hoisting plant.

RUSSELL COUNTY COAL MINING.

ANALYSIS.—Kind of coal, lignite; thickness of vein, 14 to 20 inches; total output of coal: 1890, 151,100 bushels, or .28 per cent. of the total output of the State; 1891, 160,000 bushels, or .27 per cent. of the total output of the State; estimated value of output: 1890, \$13,599; 1891, \$14,400; number of men employed, 1891, 66.

There is but one shaft mine in this county, the other openings being either slope or drift. I have no reports of any coal being stripped. None of the mines have any railroad connections. Mines are located near Bunker Hill, Dorrance, and Russell. Ventilation is nearly all done by furnace. No complaints nor reports of accidents have reached me from this county.

SHAWNEE COUNTY COAL MINING.

ANALYSIS.—Kind of coal, bituminous; average thickness of vein, 14 inches; average depth of coal from surface, 40 feet; output for the year 1890, 204,610 bushels, or .38 per cent. of the total output of the State; output for 1891, 205,000 bushels, or .35 per cent. of the total output of the State; estimated value of output: 1890, \$24,552; 1891, \$24,600; number of men employed in 1891, 58.

There are four shafts, one slope and two strip banks in this county. The coal mined is for local use only. It is sold at the mines for \$3 per ton. The coal in this county is a continuation of the Osage county vein. The workings are near Topeka, but two being as far distant as Silver Lake.

SUMMARY.

A summarization of the statistics given for each county is herewith presented, in order that a comprehensive view of the industry for the entire State may be had. The first table relates to the number of employés, and is as follows:

TABLE showing number of employés in and about coal mines, for the year 1891.

COUNTIES.	Miners.	Boys.	Others.	Total.
Bourbon.....	20	4	151	175
Chautauqua.....	6		2	8
Cherokee.....	1,345	80	401	1,826
Cloud.....	55	5	20	80
Coffey.....			*110	110
Crawford.....	1,432	53	614	2,099
Ellsworth.....	50	8	13	71
Franklin.....	91	2	103	196
Labette.....			*27	27
Leavenworth.....	693	77	117	887
Lincoln.....	51	5	14	70
Linn.....	69	4	79	152
Lyon.....	30	2	10	42
Mitchell.....	11	1	8	20
Nemaha.....	17	4	9	30
Osage.....	2,323	183	511	3,017
Republic.....	10	2	3	15
Russell.....	50	6	10	66
Shawnee.....	38	6	14	58
Totals.....	6,291	442	2,216	8,949

* Strip banks.

In the column headed "Others" are included men who are employed in the strip banks—numbering nearly 1,000. The rest of the men enumerated under this head are the day men, pit bosses, weighmen, check weighmen, prop men, track men, engineers, and laborers of all kinds employed around the top of a mine. With each one of the men finding employment at the strip banks a team is engaged. In 1889, the total number of miners returned to me was 5,388, and in 1891, under the head of "Miners," the number is 6,291, a gain of 903. The number of boys employed has also increased, as in 1889 there were returned but 272, and in 1891, 442; but I am glad to say that I believe the average age of the boys so employed is more than it was two years ago. The practice of employing young boys in mines I have discouraged as much as possible, and I have paid particular attention to discovering the number working in each mine. I do not believe the number of boys at work has increased as much as the figures would indicate, the increase being due to a large extent to the fact, as I believe, that the number employed in 1889 was not included in the returns.

The total number who find employment in and about the mines has increased in two years from 7,639 to 8,949—an increase of 1,310. This corresponds with the increase in the output of coal.

The output of coal for the State in 1890 and 1891 is very gratifying. The following table shows by counties the number of bushels mined, and the value of the same at the mines, for the years mentioned:

TABLE showing output of coal and estimated value of same, for the years 1890 and 1891.

COUNTIES.	Output for 1890.			Output for 1891.		
	<i>Estimated value.</i>	<i>Number of bushels.</i>	<i>Per cent. of output of the State.</i>	<i>Estimated value.</i>	<i>Number of bushels.</i>	<i>Per cent. of output of the State.</i>
Bourbon.....	\$33,624	480,354	.60	\$35,000	500,000	.73
Chautauqua.....	3,330	37,000	.07	3,438	38,200	.06
Cherokee.....	966,906	19,338,189	30.85	1,121,407	22,428,277	32.50
Cloud.....	11,900	170,000	.30	12,320	176,000	.25
Coffey.....	38,700	430,000	.60	38,905	434,560	.63
Crawford.....	1,080,316	21,606,377	34.34	1,155,912	23,119,629	33.56
Ellsworth.....	10,000	125,000	.20	12,096	151,200	.22
Franklin.....	66,834	779,350	1.25	71,907	838,000	1.22
Labette.....	4,500	50,000	.08	5,580	62,000	.09
Leavenworth.....	400,563	6,676,070	10.60	448,762	7,479,406	10.60
Lincoln.....	13,200	165,000	.28	13,536	169,200	.24
Linn.....	41,401	787,336	1.30	72,664	1,359,374	2.00
Lyon.....	6,920	86,510	.13	6,987	87,343	.14
Mitchell.....	1,777	23,700	.03	1,950	26,000	.03
Nemaha.....	6,072	55,200	.06	6,270	57,000	.07
Osage.....	974,227	11,715,551	18.62	898,810	11,625,515	17.10
Republic.....	1,800	20,000	.03	2,376	26,410	.04
Russell.....	13,599	151,100	.28	14,400	160,000	.27
Shawnee.....	24,552	204,610	.38	24,600	205,000	.35
Totals.....	\$3,700,221	62,901,347	100.00	\$3,946,920	68,843,114	100.00

The output for 1890 is 62,901,347 bushels, an increase over 1889 of 9,082,198 bushels, by far the largest output ever reported for the State, and this, too, in spite of the fact that the preceding winter was an unusually poor one for the coal trade. However, the output for 1890 is below that of 1891 by 5,941,767 bushels. From the column of percentages, it will be seen that the output of coal for Kansas comes practically from four counties: Crawford, with 33.56 per cent. of the total output; Cherokee, with 32.50 per cent.; Osage, with 17.10 per cent.; and Leavenworth, with 10.60 per cent. These counties, it will be noticed, produced, in 1891, 93.76 per cent. of all the coal mined in the State. In 1889 these same counties produced 93.69 per cent. of the total output. The relative position of these counties as to output is shown in the following table:

	1889.	1891.
Crawford, per cent. of total output.....	39.30	33.56
Cherokee, per cent. of total output.....	24.50	32.50
Osage, per cent. of total output.....	18.44	17.10
Leavenworth, per cent. of total output.....	11.45	10.60
Totals.....	93.69	93.76

The annual output of coal in Kansas for the years 1885 to 1891, inclusive, is as follows:

	<i>Bushels.</i>
1885.....	36,001,427
1886.....	34,750,000
1887.....	39,251,985

1888.....	42,500,000
1889.....	53,819,149
1890.....	62,901,347
1891.....	68,843,114

In seven years the output has increased from 36 millions of bushels to nearly 69 millions of bushels.

The estimated value of the output for the year 1891 is \$3,946,920. The rapid increase is not due to the opening of new coal fields—it is the result of the enlargement of plants and the establishment of new openings in the coal district proper.

The coal industry of Kansas is rapidly coming to the front as one of the largest wealth producers, both as to capital invested and the value of product, and it gives employment to a large number of our citizens.

ACCIDENTS.

Thirteen deaths occurred in and around the coal mines of the State during the year 1891. But 11 of these ought to be credited against the output of the State for the year. The deaths of James Titter and his son, Frank Titter, were so closely connected with mining that they could not be overlooked in this report. Yet the manner and place of their death had no connection with the output of coal from the mines, the accident having occurred at an abandoned mine.

With an output of coal for the year 1891 of 68,843,114 bushels, 11 fatal accidents would give a ratio of nearly 6,258,465 bushels of coal mined to every fatal accident. Of the 11 fatal accidents enumerated, seven were caused by falls of roof and side. This shows the same results as are ascertained in every coal-mining district in the world: that more than half of all the accidents that occur in mines are caused by falls of roof and side; 63.63 per cent. of the fatal accidents in this State resulted from the same cause.

There were 35 non-fatal accidents, several of which were not of a serious nature, and only resulted in the loss of a few days' work. The ratio of cause shows to be about the same as in the fatal cases—nearly 63 per cent. Two of the fatal and five of the non-fatal accidents resulted from powder explosion. This ratio was too large, and would not occur if more caution was observed in shot-firing and tamping of holes. The Commissioners on Accidents in Mines in Great Britain recommend:

1. That all work involving blasting in mines should be intrusted only to experienced workmen.
2. That in order to lessen the risk from blown-out shots, particular care should be taken that each shot should be assisted by under-cutting, nicking or shearing, whenever it is practicable.
3. That the tamping, stemming or ramming should consist of very damp or non-inflammable material.
4. That where strong tamping is needed, the compression of air at the bottom of the hole should be avoided by pushing in the first part of the tamping in small portions.
5. That where safety lamps are used, and powder is employed, the shots should be fired only by specially appointed shot men, who before firing the shots shall satisfy themselves that the foregoing instructions are observed, and shall also satisfy themselves, by carefully examining all accessible contiguous places within a radius of 20 yards of the shots to be fired, that fire damp does not exist to a dangerous extent.

This commission was composed of some of the best mining men of experience in Great Britain, with Sir Frederick Able and Professor Tyndall as chemists. The commission spent seven years investigating the causes of accidents in mines, and recommending remedies and preventives to avoid them.

NON-FATAL ACCIDENTS.

The number of non-fatal accidents for the year ending December 31, 1891, is 35. The following table is a summary of the record:

<i>Where accident occurred.</i>	<i>Date, 1891.</i>	<i>Name.</i>	<i>Character of injury.</i>	<i>Cause.</i>
Kansas and Texas Coal Company: Shaft No. 34, Leavenworth.....	Jan. 1	Owen McKenna.....	Bruise.....	Fall of slate.
Netzel & Farmer Mine: Minersville.....	Jan. 15	William Netzel.....	Wound on the head.....	Car wheel falling down shaft.
Cherokee and Pittsburg Coal and Mining Company: Shaft No. 1, Frontenac.....	Jan. 26	Dominic Calasso.....	Leg broken.....	Fall of slate.
William Hamilton, sr.: Mine No. 1, Weir City.....	Feb. 8	San Francisco Mordena.....	Bruise.....	Struck by cage.
Kansas and Texas Coal Company: Mine No. 28, Pittsburg.....	Feb. 24	William Habekamp.....	Severely bruised.....	Fall of roof.
Osage Carbon Company: Shaft No. 17, Osage City.....	Feb. 25	Joseph Dupprrie.....	Severely bruised.....	Fall of roof.
Cherokee and Pittsburg Coal and Mining Company: Shaft No. 4, Chicopee.....	Feb. 27	John Barra.....	Burn.....	Premature explosion.
Kansas and Texas Coal Company: Shaft No. 18, Weir City.....	Mar. 16	James Rennie.....	Bruise.....	Fall of slate.
Parsons Coal Company: Mine No. 1, Weir City.....	Mar. 18	Chris. Miller.....	Bruise.....	Fall of slate.
Mine No. 1, Weir City.....	Mar. 18	George Noel.....	Bruise.....	Fall of slate.
Cherokee and Pittsburg Coal Company: Shaft No. 1, Frontenac.....	Mar. 18	Michael Uhles.....	Leg broken.....	Run over by car.
J. H. Durkee Coal Company: Mine No. 1, Weir City.....	April 7	William Lewins.....	Ribs fractured.....	Caught by cars against roadway.
Pittsburg Coal and Mining Company: Pittsburg.....	May 19	Herman Potz*.....	Leg fractured.....	Fall of roof.
Foster & Armstrong: Burlingame.....	June 10	William Jackson.....	Bruise.....	Fall of roof.
Columbus Coal Company: Mine No. 2, Columbus.....	June 22	John McGregor.....	Bruise.....	Sudden starting of cars in roadway.
Keith & Perry Coal Company: Shaft No. 5, Weir City.....	June 23	Charles Eyeman.....	Severely bruised.....	Fall of slate.
Saft No. 2, Scammon.....	June 30	John Jenkins.....	Severely bruised.....	Fall of slate.

* Not an employé in mine.

<i>Where accident occurred.</i>	<i>Date, 1891.</i>	<i>Name.</i>	<i>Character of injury.</i>	<i>Cause.</i>
Western Coal and Mining Company: Shaft No. 4, Crawford county.....	Aug. 8	George Stiner*.....	Hip crushed.....	Caught between cage and buntins.
James Zucca's shaft: Burlingame.....	Aug. 12	James Milano.....	Shoulder severely bruised.....	Fall of slate.
Kansas and Texas Coal Company: Shaft No. 18, Weir City.....	Aug. 17	Henry Carzell.....	Leg and back bruised.....	Fall of coal.
Osage Carbon Company: Shaft No. 6, Peterton.....	Aug. 30	Andrew Hoagland.....	Leg broken.....	Fall of soapstone.
Lone Star Mine: Minersville.....	Sept. 2	Tony K. Dovettee.....	Leg broken.....	Fall of sandstone from pillar.
Cherokee and Pittsburg Coal Company: Shaft No. 4, Chicopee.....	Sept. 30	James McGregor.....	Burned and bruised.....	Explosion of shot.
Western Fuel Company: Shaft No. 2, Osage City.....	Oct. 3	Lee Innes.....	Severely bruised.....	Fall of soapstone.
Keith & Perry Coal Company: Mine No. 6, Weir City.....	Oct. 7	John Vallie.....	Burn.....	Blown-out shot.
Mine No. 6, Weir City.....	Oct. 7	Eugene Goss.....	Burn.....	Blown-out shot.
Kansas and Texas Coal Company: Shaft No. 18, Weir City.....	Oct. 23	Joseph McDowell.....	Foot severely bruised.....	Fall of roof slate.
Cherokee and Pittsburg Coal Company: Shaft No. 1, Frontenac.....	Nov. 7	Gus. Peterson.....	Bruise.....	Fall of slate.
Saift No. 1, Frontenac.....	Nov. 11	William Bold.....	Leg broken.....	Fall of roof slate.
Osage Carbon Company: Shaft No. 12, Scranton.....	Nov. 12	Gus. Trabba.....	Legs injured.....	Fall of roof.
Pittsburg and Midway Coal Company: Mine No. 2, Midway.....	Nov. 12	James Stilson.....	Ribs broken.....	Fall of slate.
Kansas and Texas Coal Company: Mine No. 18, Weir City.....	Nov. 20	James Thompson.....	Bruised and cut.....	Coupling railroad cars, "on top."
Keith & Perry Coal Company: Shaft No. 5, Weir City.....	Dec. 1	Robert C. Hill.....	Loss of two fingers.....	Coupling railroad cars, "on top."
Scandinavian Coal and Mining Company: Shaft No. 6, Peterton.....	Dec. 18	Samuel Davis.....	Bruised.....	Fall of roof.
Weir City Coal Company: Weir City.....	Dec. 18	Frank Ferrero.....	Burned.....	Powder explosion.

* Not an employé in mine.

January 1, 1891.—At No. 34 mine, Kansas and Texas Coal Company, Leavenworth, Kas., Owen McKenna was injured by a fall of slate, while assisting a fellow-miner to fix up his place. The injury was of a slight nature, and he was idle only a few days.

January 15, 1891.—William Neitzel, one of the operators of the Neitzel & Farmer mine, Minersville, Cloud county, received a very dangerous wound on the head, by a mine car wheel falling down the shaft and striking him, while in the act of putting a loaded car on the cage, at the bottom of the shaft. He was unable to work for five weeks. This accident was the result of neglecting to put the proper keys in the axle to retain the wheel in its place.

January 26, 1891.—Dominic Galasso had his leg broken by a fall of slate in his room, at No. 1 shaft, Cherokee and Pittsburg Coal and Mining Company, Frontenac, Crawford county. He was idle for seven weeks. This accident was caused by his neglect in not propping the roof carefully.

February 8, 1891.—An accident occurred at mine No. 1, of William Hamilton, sr., Weir City, Cherokee county, whereby Sanfrancisco Mordena was injured. He was caught, while crossing the bottom of the shaft, by the descending cage. He had been warned by the cager not to cross under the cage; in fact, was pulled back once by the cager when attempting to do so; but he persisted in crossing, with the above result, notwithstanding there was a good traveling-way around the bottom.

February 24, 1891.—An accident occurred at mine No. 28 of the Kansas and Texas Coal Company, at Pittsburg, Kas. William Habekamp was caught by a fall of slate in his room, which bruised him severely on the leg and at the knee and hip. He was unable to work for several weeks, though no bones were broken. The accident was caused by a slip in the roof loosening the slate and knocking out the props next to the face of the room. No blame could be attached to anyone, as the place was well propped and in good condition, with the exception of the slip mentioned, which could not be observed until it fell.

February 25, 1891.—An accident occurred at No. 17 shaft, Osage Carbon Coal Company, Osage City, Kas., whereby Joseph Dupprrie, aged 46 years, a Frenchman, had his back and right shoulder severely bruised. He had just turned a new room on the third east entry of the south main entry, and gone in to his work on the morning of the above date and commenced wedging down the coal on the road-head, when a piece of the roof came down on him, one end striking him on the shoulder and back, the other resting on an empty mine car behind him, which partly saved him, and enabled him to extricate himself without assistance. He was only idle for a short time.

February 27, 1891.—John Barra, a miner employed at No 4 shaft, Cherokee and Pittsburg Coal Company, at Chicopee, Kas., was burned about the breast and arms by a premature explosion of powder, while drilling out a hole, which was false-tamped. This dangerous practice is still being indulged in by miners, notwithstanding the repeated warnings and the many serious accidents occurring thereby.

March 16, 1891.—James Rennie was injured by a fall of slate, while at work in his room at No. 18 shaft, Kansas and Texas Coal company, at Weir City, Cherokee county. His injuries were not serious, and he was able to resume work in a few days.

March 18, 1891.—Two miners, named Chris. Miller and George Noel, were injured by a fall of roof slate, in the room of the latter, at mine No. 1 of the Parsons Coal Company, Weir City, Cherokee county. Miller, while pushing his loaded car to the entry, got in the dark, and went into Noel's room for a light. While there, both sat down, when the slate fell, injuring them, but not seriously. They are good miners, and very careful, but Noel had overlooked this place.

March 18, 1891.—An accident occurred at No. 1 shaft, Cherokee and Pittsburg Coal Company, Frontenac, Crawford county, whereby Michael Uhles, employed as spragger, got his leg broken and cut, at the first south entry off the west entry. While trying to sprag the mine cars, which were running at a rapid rate, the sprag missed, and he fell, with the result as stated.

April 9, 1891.—William Lewins received a severe fracture of the ribs, caused by his getting on a trip of loaded mine cars. He was caught between the cars and the side of the roadway, while they were being drawn to the bottom by a mule, at No. 1 mine of the J. H. Durkee Coal Company, Weir City, Cherokee county.

May 19, 1891.—At the Pittsburg Coal and Mining Company's shaft, Pittsburg, Crawford county, Kas., on the above date, a young man named Herman Potz, an employé of the Pittsburg Boiler Works, and not employed in the mine, went down to visit his brother, who worked there, at about 9 o'clock A. M. While in the working place of his brother a mass of roof slate fell on him, knocking him down. His left leg was fractured, and serious internal injuries were inflicted, from which the boy recovered after a long and painful illness. This should act as a warning for all those not employés of a mine nor working in it not to enter the same.

June 10, 1891.—William Jackson, a boy 14 years of age, employed as a miner at Foster & Armstrong's coal mine, at Burlingame, Osage county, Kas., was injured slightly by a piece of roof stone falling on him in the roadway, where he was at work with his father. The injuries were not severe, and he was able to resume work in a few days after the accident.

June 22, 1891.—An accident occurred at the Columbus Coal Company's mine No. 2, whereby John McGregor was bruised on the neck and left side, caused by the mule starting up while he was passing by the mine cars attached to the same. He was going to the face of the entry, and was jammed between the mine cars and the side of the roadway. The injury did not seem serious at first, but, being an old man, he has been able to work but very little, if any, since the accident.

June 23, 1891.—Charles Eyeman, a miner employed at No. 5 shaft, Keith & Perry Coal Company, Weir City, Cherokee county, was severely bruised on the breast and thighs and otherwise hurt by a fall of slate which he was taking down, and which was larger than he expected it to be. The accident caused him to lose several weeks' work.

June 30, 1891.—An accident occurred at No. 2 shaft, Keith & Perry Coal Company, Seammon, Cherokee county, whereby John Jenkins, employed as a shot-firer in the above mine, was severely bruised, but no bones broken. He had lighted the shots in one room, and had passed through the break-through into an abandoned room out of the way of the shots. While sitting there waiting till the shots should go off, a mass of slate fell on him, injuring him as above. He was unable to resume his work for several weeks.

August 8, 1891.—At No. 4 shaft, Western Coal and Mining Company, Crawford county, Kas., an accident occurred to George Stiner, whereby he got his hip crushed. He was not an employé at the mine, but had gone down the same to see some tools which he intended to purchase. He was coming up out of the mine on the cage, alone, when, by some cause unknown, he fell on the cage and got caught between the buntins of the shaft and the cage. He was unable to work for several months after the accident.

August 12, 1891.—An accident occurred at James Zucca's shaft, Burlingame, Osage county, whereby James Milano, an Italian, aged 35 years, got his right shoulder severely bruised, but no bones broken. He was branching a new road, and had got it cut over the face of the coal on the right side of the roadway when a corner of the top, back about 2½ feet on the left side of the roadway, gave way, and

falling on him, knocked him down and injured him as above. He was able to go to work again in a few days.

August 17, 1891.—Henry Carzell had one leg and his back bruised by a fall of coal in his room, at No. 18, Kansas and Texas Coal Company, Weir City, Cherokee county. He was in the act of mining off a shot of coal in his room, on the second south entry of the first east entry on the north side of shaft. The coal came away, falling on him, and bruising him. No bones were broken, and he was able to resume work in a short time.

August 30, 1891.—An accident occurred at No. 6 shaft, Scandinavian Coal and Mining Company, Peterton, Osage county, whereby Andrew Hoagland, a Swede, aged 40 years, got his left leg broken, by a piece of soapstone, about 50 pounds in weight, falling on him. This mine is very wet, and great care should be taken to have it carefully timbered, especially in the vicinity of slips in the roof.

September 2, 1891.—At the Lone Star mine, Minersville, Cloud county, Tony K. Dovettee met with a serious accident, resulting in having his left leg broken, and other serious injuries. The cause was a fall of sand rock from off the side of the pillar at the end of his room, while he was cleaning out the water ditch. It was an accident which could not be foreseen. He was acting as pit boss of the mine, and mined some coal also.

September 30, 1891.—On the evening of the above date, James McGregor, employed as a shot-firer at No. 4 shaft, Cherokee and Pittsburg Coal Company, at Chicopee, Crawford county, was burned and bruised considerably about the head and face and right side, caused by going back on a shot that he supposed had already exploded, but had not; the shot went off just as he approached it. He was very fortunate in not being killed, under the circumstances.

October 3, 1891.—An accident occurred at No. 2 shaft of the Western Fuel Company, Osage City, Osage county, whereby Lee Innes, aged 28 years, had his left leg and side severely bruised, by soapstone falling on him while in the act of brushing his roadway. He had cut one side of the brushing, and was cutting the other side, when it came away, falling on him with the above result. The reason of the stone falling was a clear slip—or smooth—which was not observed by Innes, as it could not be seen until the stone had fallen.

October 7, 1891.—John Vallie and Eugene Goss, employed as shot-firers at Keith and Perry Coal Company's No. 6 mine, Weir City, Cherokee county, were burned at 6 o'clock p. m., on above date, by an explosion caused by a blown-out shot. The shot, upon examination after the explosion, had been drilled two feet in the solid, and was light at the outer end, being only two feet thick at the latter place, and six feet six inches at the back of the hole—a very badly arranged shot, and should not have been fired by the shot-firers. One shot had been fired in the same room previous to the one above alluded to.

October 23, 1891.—An accident occurred at No. 18 shaft, Kansas and Texas Coal Company, Weir City, Cherokee county, whereby Joseph McDowell, employed as a miner, had his foot severely bruised by a fall of roof slate while at his work. He was not able to resume work for several weeks.

November 7, 1891.—Gus. Peterson, employed as a miner at No. 1 shaft, Cherokee and Pittsburg Coal Company, Frontenac, Crawford county, was injured by a piece of slate falling on him, while at work in his room in above mine. He was not seriously injured, and was able to resume work in a few days.

November 11, 1891.—William Bold, employed as mule driver at No. 1 mine, Cherokee and Pittsburg Coal Company, Frontenac, Crawford county, had his leg broken by a piece of roof slate falling on him in the entry. He was not able to go to work again for several weeks.

November 12, 1891.—An accident occurred at No. 12 shaft, Osage Carbon Company, Scranton, Osage county, to Gus. Trabba, injuring his legs. He was brushing at the face of his room, to make the proper height for his roadway, when he struck a smooth, or parting, loosening the roof, which fell on him, with the above result. He was laid off work for a few days only.

November 12, 1891.—James Stilson, employed as a miner at the Pittsburg and Midway Coal Company's mine No. 2, Midway, Crawford county, had his ribs broken, head cut, and was bruised generally, by a fall of slate in his room, which was purely accidental, as Stilson was considered a good and careful workman, and used all ordinary precaution. He was idle a long time from the effects of the injury.

November 20, 1891.—James Thompson, an employé on top at No. 18 mine, Kansas and Texas Coal Company, Weir City, Cherokee county, had his hand severely bruised and cut, while attempting to couple two railroad cars. This was not part of his work, and he had no right to touch the couplings of the cars. His duties were to let the empty cars down to the screens and chutes.

December 1, 1891.—Robert C. Hill, employed as car trimmer at No. 5 shaft, Keith & Perry Coal Company, at Weir City, Cherokee county, had two fingers taken off his right hand at the second joints, while coupling loaded railroad cars. This was no part of his work, and he had been warned several times not to do so.

December 18, 1891.—Samuel Davis, employed as a miner at No. 6 shaft, Scandinavian Coal and Mining Company, Peterton, Osage county, was wedging coal in his room, and a piece of soapstone roof, weighing about 700 pounds, fell and bruised him severely. No bones were broken. The stone fell out from a slip between the props and the coal face, and could not be observed before it fell. The roof in this mine has a great many slips through it, and as a consequence is rather dangerous.

December 18, 1891.—Frank Perrero, employed as a miner at the Weir City Coal Company's mine, Weir City, Cherokee county, was burned and otherwise injured by an explosion which occurred while he was tamping his shot.

FATAL ACCIDENTS.

For the year ending December 31, 1891, there were reported to me, as State Coal Mine Inspector, 13 fatal accidents. Tabulated, the summary is as follows:

<i>Where accident occurred.</i>	<i>Date of accident.</i>	<i>Date of death.</i>	<i>Name.</i>	<i>Cause.</i>
Kansas and Texas Coal Co.: Shaft No. 23, Weir City.....	Jan. 23...	Feb. 7...	Thomas Clasper.....	Fall of roof
Kansas and Texas Coal Co.: Mine No. 34, Leavenworth.....	May 11...	May 11...	Elihu Hurley.....	Fall of roof.
Keith & Perry Coal Co.: Shaft No. 3, Weir City.....	.....	.....	Clarence Manning,	Fall of roof.
Weir City Coal Co.: Shaft No. 1 (abandon'd), Weir City,	.....	.....	James Titter.....	Black damp.
Saft No. 1 (abandon'd), Weir City,	.....	.....	Frank Titter.....	Black damp.
Superior Coal & Mining Co.: Shaft No. 5, Osage City.....	June 24...	June 24...	August Sands.....	Fall of soapstone.
Weir City Coal Co.: Shaft No. 2, Weir City.....	July 20...	July 22...	James May.....	Struck by mine car.
Pittsburg and Midway Coal Co.: Shaft No. 1, Midway.....	Aug. 25...	Aug. 25...	R. E. Jones.....	Fall of slate.
Kansas and Texas Coal Co.: Shaft No. 17, Litchfield.....	Oct. 15...	Oct. 15...	John Comiskey.....	Powder explosion.
Walter Richardson's mine: Minersville.....	Oct. 27...	Oct. 27...	Albert Parker.....	Fall of roof.
Pittsburg Coal Co.: Pittsburg.....	Nov. 6...	Nov. 6...	Charles Green.....	Fall of roof.
Cherokee and Pittsburg Coal Co.: Mine No. 4, Chicopee.....	Dec. 21...	Dec. 21...	Frank Skobitz.....	Powder explosion.

January 28, 1891.—Thomas Clasper was seriously injured by a fall of slate in his room, in No. 23 shaft, Kansas and Texas Coal Company, at Weir City, Cherokee county. He was mining coal, which got loosened and came down, which relieved a slip in the roof, letting a mass of slate fall on him, crushing him severely, injuring his back and bruising him internally, from the effects of which he died 10 days later, leaving a wife and two children. His place was well propped, but the roof was very dangerous, being full of slips.

March 28, 1891.—In mine No. 2, Keith & Perry Coal Company, Weir City, Cherokee county, operated by Wm. Hamilton, sr., William Bateman was found lying in a pool of blood, dead, about 200 yards from his working place. It seems that deceased was on his way coming out of the mine, and had sat down to rest by the side of the roadway, where he was found at 2:30 o'clock P. M. on above date. He was unmarried. A *post-mortem* examination was held, giving the cause of death to be hemorrhage of the lungs. The coroner's jury rendered a verdict in accordance with the above.

May 11, 1891.—An accident occurred at No. 34 shaft, Kansas and Texas Coal Company, Leavenworth, Kas., whereby Elihu Hurley, employed as a company man, lost his life, in room 2, third south entry, in above mine, while at work with others cleaning up above room. A mass of sulphur rock fell from the roof, and when he was taken from under it he was dead. Deceased was married, 28 years of age, and left a wife with two children, aged 4 years and 18 months, respectively. The following is the evidence taken at the coroner's inquest and the verdict of the jury:

Proceedings and testimony at the coroner's inquest, held in Leavenworth city, Kas., May 12, 1891, on the body of Elihu Hurley, killed at the coal mine of the Kansas and Texas Coal Company, before E. F. Quinn, coroner,

THOMAS GRAHAM, being duly sworn, states:

Question. Your name, please. Answer. Thomas Graham.

Q. Thomas Graham? A. Yes sir.

Q. Now, Mr. Graham, will you go on and tell the jury what you know about this?

A. Well, there was a rock fell on him about 5½ feet long.

Q. Where did this happen? A. In the room, 26 feet from each roadway. The room on the southeast side of the shaft.

Q. In the Riverside shaft? A. In the Riverside shaft.

Q. Where did this happen? A. In the third south entry.

Q. In the Riverside mine? A. Yes, sir.

Q. Where? On what side? A. On the southeast side.

Q. At what entrance? A. Third south entry.

Q. In the Riverside mine? A. Yes, sir.

Q. Well now, what else? A. Betwixt the first and second room.

Q. Betwixt the first and second room? A. Yes, sir.

Q. Go ahead now and tell any particulars. A. Just about the center of the two places.

Q. Well, proceed. A. I guess the stone was about 5½ feet in length, and about 20 inches across the center of it, and it tapered to about six inches on each end.

Q. Wait a minute—the stone was what? About five feet long? A. About 5½ feet, and about 20 inches across the center of it.

Q. Well now, proceed. A. About six inches thick on each end.

Q. About six inches thick on each end? A. About 14 in the center.

Q. About six inches thick on each end, and how much in the center? A. About

14.

Q. About 14 in the center? A. Yes, sir.

Q. Well now, proceed. A. There were about 2½ feet betwixt the stone and the gob where he could have crawled through.

Q. Proceed now—go on. A. That is about all I know about it.

Q. What time did the accident happen? A. About half-past two.

Q. Did the man work all day? A. Yes, sir.

Q. It happened about half-past two? A. Yes, sir; I don't think it was later than that.

Q. Well now, go on. You are the pit boss? A. Yes, sir.

Q. What time did you examine the rooms? A. Every morning.

Q. Did you know if there was anything wrong in the mine in that room? A. Well, they took the coal from under the rock.

Q. I want to ask you if he knew anything about the rock being loose? A. No. He was in there taking the coal out of the place.

Q. He was in the room? A. Yes, sir.

Q. What we want to get at is, did this man think the place was all right when he went in there? A. He undermined the coal, and it left a loose rock.

Q. What was the man's name? A. Hurley.

Q. Did he have a man with him? A. Yes, sir.

Q. What was his first name? A. Elihu.

Q. How far did it fall? A. The coal was only 22 inches in height, and he was to crawl under it; so it could not fall very far.

Q. How did the stone fall on him? A. Right square on top of him; on his head and shoulders and on his right side.

Q. Was he discovered at once? A. Yes, sir; we were close to him.

Q. Was he killed outright? A. He lived about three or four minutes.

Q. Three or four minutes? A. About that; I do not suppose he lived any longer.

Q. Could not that rock be propped up so that it could not fall? A. They did not need to get under the stone. They had a way to get around the stone. That sulphur rock hardly ever falls.

Q. Whose business would it be to prop it up? A. The man's place who worked there. It is something that hardly ever falls in the place. It nearly always has to be wedged down.

Q. Are you pit boss? A. Yes, sir.

Q. You consider it, then, an unavoidable accident? A. Yes, sir.

Q. If it was anyone's fault, it was his own? A. It was his fault more than anyone else's.

Q. They took the coal from under it, and they should have wedged it down? A. Yes, sir.

Q. You say it was purely an accident? A. Well, he knew the rock was there, and he had a way of crawling around it instead of crawling under it.

HENRY KOCH, being duly sworn, states:

Question. Your name is Henry what? Answer. Henry Koch.

Q. You say your name is Henry Koch? A. Yes, Henry Koch.

Q. Do you work in the Riverside mine? A. Yes.

Q. Miner? A. Yes; doing company work now.

Q. Well, now, Mr. Koch, you tell the jury how this happened and all about it. A. He went from this room where we were working into—

Q. Wait a minute. What was his name? A. Elihu; Elihu Hurley.

Q. That is the name of the man who was killed? A. Yes, sir.

Q. Elihu Hurley was the name of the deceased. Tell the jury how it happened. Make it as short as you can. A. He went to the next room and wanted to get some oil or a drink, and when he came back he crawled right under that stone, when there was room enough to get past without going under it.

Q. He crawled under the stone, then? A. He crawled under the stone, and the same time when he got under there the stone fell.

Q. And as he got under the stone it fell? A. It fell right on his head and shoulder.

Q. On his head and shoulders; both shoulders? A. He had both shoulders under it.

Q. All right; go on. A. We were six hours in that room. We went up there and tried to get him out. We heard him holler, and tried to get him out.

Q. How far were you away from him? A. I was away from him about five or six feet. I did not hear the stone fall; I heard him holler.

Q. Did you know the stone was loose? A. I was working in there all day, and told him that it was not safe. I did not tell him the last time he went to the room, but I told him when he went in there. There was about two feet and a half between the gob and the stone.

Q. Why was it not propped up the day before? A. It was all right. This stone was a sulphur and did not fall often. It had to be wedged.

Q. But it had to come down? A. The stone could not be propped up.

Q. And he could have gone up some other way, could he? A. Yes.

Q. Did it ever happen here before that a stone fell? A. No; it never happened here as I know.

Q. It does not happen often that one of those rocks will fall? A. No.

Q. You think it was purely an accident? A. It was purely accidental.

Q. It could not be avoided? A. No.

Q. The falling of the stone could not be prevented? A. No.

Q. When did you tell him the rock was loose? A. When he went to the other room, I did not tell him then. I told him before. I notified him when he came in at noon.

Q. You notified him at noon that the stone was loose? A. Yes.

ISRAEL T. JOHNSON, being duly sworn, states:

Question. Your name is what? Answer. Israel T. Johnson.

Q. Do you work in this mine? A. Coal miner.

Q. You work company work? A. Yes, sir.

Q. For the Riverside Coal Company? A. Yes, sir.

Q. Kansas & Texas Coal Company? A. Yes, sir.

Q. Tell the jury what you know about this. A. Elihu Hurley went to the next room to get a lamp full of oil.

Q. Went where? A. To the next room.

Q. To the next room? A. Yes, sir.

Q. To get some oil and water? A. Yes, sir.

Q. Well, now, what next? A. The pit boss sent me up there to get his shovel, and just as he was coming back I started up there and got as far —

Q. Just wait a minute—to get a shovel? A. Yes, sir; I did.

Q. Well, what next? A. Then we both met right here at this place where this stone was, and I crawled up to the gob and laid aside for him to pass.

Q. Wait a minute—met where? A. Where this stone was.

Q. Both met where the stone was. Proceed. A. And just as he got even with me I told him, I says, "Hurry up there and get out of the way; it looks like it was going to fall."

Q. Wait a minute—just as he got even with you, you told him what? A. "Hurry up; it looks like it was going to fall." Just as he got even with me.

Q. Wait a minute—just as he got even with you, you told him to hurry up. A. Yes, sir.

Q. You told him to hurry up—that the stone looked like what? A. 'T was going to fall.

Q. You told him to hurry up—that the stone looked as if it was going to fall? A. Yes, sir. He tried to get out of the way, but before he could get away it dropped on him.

Q. He made an effort to get out of the way? A. Before he could get out of the way it dropped on him. Yes, sir.

Q. He made an effort to get out of the way, but before he could get out of the way the stone fell on his head; what else, now? A. When the stone dropped on him, I hollered for somebody to help to get it off of him.

Q. You went to get it off of him? A. Yes, sir. We three went to take the stone off.

Q. You three went to take the stone off; well, what else? A. Well, that is all I know. He could have crawled towards me; he did not need to crawl under the stone.

Q. You say there was room enough for him to pass without crawling under the stone? A. Yes, sir. I told him at the time that it was dangerous; told him to hurry up. He was talking and joking with me when it fell on him.

Q. You told him it was dangerous? A. Yes, sir.

Q. What caused it to drop—did he touch it? A. He might have touched it and caused it to drop, but of course a man crawling through it is liable to touch the roof anywhere.

Q. Did you see the stone fall? A. Yes, sir; I was laying right aside of him.

Q. What part did it fall on? A. On his shoulders and head.

Q. He was not any time under there—just passing through? A. No, he did not stop—crawling right through.

Q. And you could not say what was the cause of its dropping all at once? A. No, sir.

Q. How long did he live after it dropped on him? A. About three or four minutes.

Q. How many days was that stone in that condition? A. I do not know. Yesterday was the first time I was up in there. It could not have been that way very long.

Q. Was there an effort made to secure the stone, or take it down, knowing it was dangerous? A. Sir?

Q. Was there no effort made by some one to move the stone from the roof before it fell? A. They were working up that way to get the stone—to prop it up and make it safe. They were taking coal out so as to take it down and make it solid.

Q. In the case of a stone like that, do you brace it up? A. We wedge it down and load it up.

VERDICT.

LEAVENWORTH, May 12, 1891.

We, the undersigned jury, being duly impaneled and sworn, upon our oaths do find, that the deceased, Elihu Hurley, came to his death by the falling of a rock upon him—purely accidental; and we further believe that there was no blame attached to the Kansas and Texas Coal Company, in whose mine the accident occurred.

FRANK McQUILLEN.

LOUIS VOSS.

JOHN GREELISH.

E. D. GRAY.

ED. RICE.

HENRY HITCHCOCK.

June —, 1891.—A serious accident occurred at an old traveling-way, connected to an abandoned shaft of the Weir Coal Company, Weir City, Cherokee county. Frank Titter and a boy named Willie Eadie were playing at the old traveling-way; they had tried to see who would go furthest down the old stairway into the abandoned mine, and Titter was first; he had only descended a few steps when he was overcome by carbonic-acid gas, and fell to the bottom of the shaft. The other boy gave the alarm, and assistance came soon, but no one seemed to know how to do anything. In the meantime, the father of the boy, James Titter, heard of the accident, and ran as fast as he could, for nearly half a mile, to rescue his boy, and, not thinking of danger from gas, rushed down the stairway, but only proceeded a few steps when he was overcome with the deadly gas and fell to the bottom. It took nearly two hours to get the boy and his father out of the shaft, when both were found to be dead. A coroner's inquest was held, and the verdict rendered that both came to their death by being overcome with carbonic-acid gas, or black damp.

June —, 1891.—An accident occurred at Keith & Perry Coal Company's mine No. 3, Weir City, Cherokee county, Kansas, whereby Clarence Manning, a young man, aged 19 years, was killed. In company with another man, deceased was engaged in making a new cross-road through some abandoned rooms, and were cutting through a pillar, when a mass of roof slate fell and caught Manning, killing him instantly. A coroner's inquest was held, and rendered a verdict of accidental death by a fall of roof.

June 24, 1891.—An accident occurred in No. 5 shaft of the Superior Coal and Mining Company, at Osage City, Osage county, whereby a miner named August Sands, aged 50 years, a Swede, lost his life. The accident was in north cross entry, off first east entry, on north side of shaft. Deceased had taken down a fall of coal, and was in the act of putting coal to the roadhead, when a piece of soapstone roof, weighing about two tons, fell on him, catching his head and shoulders, killing him instantly. He had only one prop to the stone, which the weight of the stone swung out. It was a bad slip in the soapstone roof, which could not be seen, and as a consequence was almost impossible to guard against. August Ericson, who was working with him as a partner, had just gone out of the mine to have some picks sharpened at the time of the accident. Deceased was married, and left a wife and family.

July 20, 1891.—At about 8 o'clock A.M., Monday, July 20, James May, aged 39 years, was seriously injured at the slope of the Weir City Coal Company, generally

known as "Bennett's Slope," by an empty car, which broke away from the top of the slope, and, running down the same, struck May, who was standing at the foot of the slope, which he had only descended a few minutes before, crushing in his shoulder and side, from which he died 49 hours later, never recovering consciousness. This slope is worked by the endless-rope system, and the cars are run in trips of two coupled together, with a clutch grip on the rope on the first car going up the slope and on the last car going down the same. May was late coming to work, and followed one empty trip down the slope, and when he got to the foot of same he stopped to light his lamp and get accustomed to the darkness of the mine. The cager, Adam Humble, at the bottom of the slope, who took off the empty cars and put the loaded cars on the rope, stated that May was standing with one foot resting on the empty track when Humble told him to get out of the way, as an empty trip was coming, but did not know that it was a runaway car, and he says May did not reply nor seem to notice him. There was plenty of room for him to get out of the way of the car. The cause of the accident or the car running away is differently stated by the two men who were in immediate control of the operating of the cars going up and down the slope at the time. Adam Humble, who put on the cars at the bottom, stated that he put a coupling, which was partly broken and not fit to be used, on the top of the loaded cars the trip previous to the accident, and he thinks that the top man put this coupling in the trip with which the accident occurred. On the other hand, Charles Hill, the top man, says that when he was starting the trip at the top of the slope the coupling jumped out of the cars, letting the first car run down the slope. There are two blind switches for turning runaway cars off the track before they reach the mouth of the slope, thus preventing them from running into the mine, but by some means the top man failed to have them turned in time to prevent further accident.

August 25, 1891.—An accident occurred at the Pittsburg and Midway Coal and Mining Company's shaft No. 1, whereby R. E. Jones, employed as a miner, was killed. Deceased was engaged in taking out entry pillars, and had fired a shot in the corner of one of them, taking down a large mass of coal, when he examined the roof and found it loose, and proceeded to put a prop under it, when, striking the prop, it sprung back and let the roof fall on him, killing him instantly. Deceased was father of the pit boss, Thos. R. Jones.

October 15, 1891.—At No. 17 shaft, Kansas and Texas Coal Company, Litchfield, Crawford county, on or about 7 o'clock p. m., John Comisky, aged 32 years, employed as a shot-firer, came to his death in the last room in the second east entry, north side of shaft. Deceased had lighted two shots in the face of the entry, one of which was pointing outward and towards a room partially turned, into which deceased retired for safety until the shots exploded, but the shot above described as pointing to this room blowed through and struck deceased on the head, killing him instantly. W. H. Bird, the partner of deceased for five months previous to the accident, said that he (Bird) went on the south side of the shaft and fired all the shots on that side; then came to the north side to meet deceased, as was their usual custom, at an agreed place. On the night in question, deceased did not come at the usual time, when Bird went to look for him, and found him as above described. Bird also said their instructions were, not to fire any shots that in their judgment were too much on the solid, or any one that the shot-firers considered dangerous. Deceased was married, but had no family.

October 27, 1891.—At 2 o'clock p. m. on above date, Albert Parker, aged 34 years, was killed by a fall of sand-rock roof in his room, while at work in the Walter Richardson mine, at Minersville, Cloud county. It was the last room on south side of east entry. Deceased was lying down on his right side, in the act of undermining

the coal; his partner, J. A. Deweese, was also in the room, throwing coal to the roadway, when he saw the roof working; he called to deceased to get out of the way, at the same time jumping to the roadway himself, just in time to avoid being caught by the falling roof. He at first thought deceased had gone out by the next roadway, but, upon looking back, saw him under the fall. He gave the alarm, and it required the utmost exertion of four men two hours to get his body out. The rock was 10 feet long, $2\frac{1}{2}$ feet wide, and 2 feet thick. The room had not been worked for several days and was in a dangerous condition. He left a wife and widowed mother, who were dependent on him for support. The following is the verdict of the coroner's jury:

STATE OF KANSAS, CLOUD COUNTY, SS.

An inquisition held at Minersville, in Cloud county, on the 27th day of October, 1891, before me, a justice of the peace of Sibley township, in said county, acting coroner of said county, on the body of Albert Parker, there lying dead, by the jurors whose names are hereunto subscribed. The said jurors upon their oaths do say, that Albert Parker came to his death by an accidental falling of sand rock, while at work in his room in the Walter Richardson coal mine, due solely and entirely to his own dereliction in not taking warning when told of the approaching danger, and which could have been avoided had he been a practical miner.

IN TESTIMONY WHEREOF, Said jurors have hereunto set their hands, this 27th day of October, 1891.

K. E. VERMETT.	S. F. WILSON.
ALEX. HENDERSON.	WM. NEITZEL.
H. WILLMAT.	R. DAX.

Attest: JAMES A. GUSHWA, *Justice of the Peace, Cloud county.*

November 6, 1891.—An accident occurred at the Pittsburg Coal Company's mine, Pittsburg, Crawford county, whereby Charles Green lost his life. On the first north entry, east side of shaft, deceased was driving the back entry, and had come into the place of William Harmer, who was in the main entry, 42 feet in advance of the back entry. The deceased came to ask Harmer what o'clock it was. Harmer came out from under a piece of roof slate, where he was working, to get his watch out of his pocket, when deceased went into the place where Harmer came out of, and had not got time to sit down when the piece of roof slate fell on him and killed him instantly. Harmer did not know the roof was loose, and it is evident that Green's coming into his place saved Harmer's life, and lost his own. Following is the verdict of the coroner's jury:

STATE OF KANSAS, CRAWFORD COUNTY, SS.

An inquest holden in the city hall, in Pittsburg, in Crawford county, on the 6th day of November, A. D. 1891, before me, C. A. Fisher, coroner of said county, on the body of Charles Green, there lying dead, by the jurors whose names are hereto subscribed. The said jurors upon their oaths do say, that Charles Green came to his death by an accident in the Pittsburg Coal Company's shaft, by a fall of slate.

IN TESTIMONY WHEREOF, The said jurors have hereunto set their hands, the day and year aforesaid.

A. B. CHURCH.	JOHN T. VICKERS.
WM. B. GROSS.	G. BENEDICT.
J. D. WEARE.	GEORGE FOX.

Attest: C. A. FISHER, *Coroner.*

Frank Skobitz, aged 31 years, was killed by a shot in No. 4 mine, Cherokee and Pittsburg Coal Company, Chicopee, Crawford county, about 7:30 P. M., December 21, 1891. He had been shot-firing, and went into a room in which there were three shots, and it is supposed that he had lighted all of the shots, when two of them went off, and he had returned to light the other one, when in the act of doing so it exploded and killed him. That is the opinion of his partner, Wm. Edwards, and all the others who found him.

Following is the verdict of the coroner's jury:

At an inquest holden at Chicopee, in Crawford county, on the 22d day of De-

cember, A. D. 1891, before me, C. A. Fisher, coroner of said county, on the body of Frank Skobitz, there lying dead, by the jurors whose names are hereto subscribed, the said jurors upon their oaths do say: That we have inspected the body, heard the testimony, and made all needed inquiries; we, the jurors, do agree that he came to his death by a shot, while in the act of going to refire it, on the evening of December 21, 1891, at No. 4 shaft, Chicopee, Crawford county, Kansas.

IN TESTIMONY WHEREOF, The said jurors have hereunto set their hands, the day and year aforesaid.

MARK CUMMINGS.

JOHN FUNKE.

ROBERT LEIGH.

L. H. DEMARS.

HERMANN BUGE.

CASPAR ASCHOBEB.

Attest: C. A. FISHER, *Coroner.*

BOILER INSPECTION.

Section 3, chapter 11, Session Laws of 1883, reads as follows:

Every steam boiler used in or around the coal mines of this State shall be provided with a proper steam gauge and water gauge, to show respectively the pressure of steam and height of water in the boilers, and to be also provided with a proper safety-valve; and the owner, agent or operator shall have the said boiler or boilers examined and inspected by a competent boiler maker, or other qualified person, once in every six months; and the result of every examination shall be certified in writing, and conveyed to the Mine Inspector, to be filed in the records of his office.

The above law provides for an inspection of boilers at regular intervals, and that a certified copy of the same shall be sent to the Inspector of Mines. While no serious damage has occurred at any of the mines in the State using steam, it is no reason why this part of the law should not be rigidly complied with. The few reports below show how many have fulfilled the requirements of the law. As there are over 70 boilers in use at the different coal mines of the State, those complying with this provision are but a small percentage of the whole. Blanks upon which to make reports have been sent to all.

CHEROKEE COUNTY.

Report from Columbus Coal Company:

To State Mine Inspector: I hereby certify that the boilers used by the Columbus Coal Company at their shaft $4\frac{1}{2}$ miles north of Columbus were examined and inspected on the 6th day of June, 1891, and found to be in good order and safe under a pressure of 80 pounds—and we use 45 pounds.

WM. WINN, *Engineer.*

Report from Norton Coal Company:

To State Mine Inspector: I hereby certify that the boiler used by the Norton Coal Company at their shaft at Scammon was examined and inspected on the 3d day of July, 1891, and found to be in good order.

J. H. GUINN, *Engineer.*

CRAWFORD COUNTY.

Report from Cherokee and Pittsburg Mining Company:

To State Mine Inspector: I hereby certify that the boiler used by the Cherokee and Pittsburg Mining Company at their shaft No. 4, at Chicopee, was examined and inspected on the 25th day of July, 1891, and found in good condition, and we carry 60 pounds pressure.

N. W. HENDERSON.

To State Mine Inspector: I hereby certify that the boiler used by the Cherokee and Pittsburg Coal and Mining Company at their shaft No. 1, at Frontenac, was examined and inspected on the 25th day of July, 1891, and found that they were being repaired, and then they will be in as good a condition as new.

N. W. HENDERSON.

To State Mine Inspector: I hereby certify that the boiler used by the Cherokee and Pittsburg Mining Company at their shaft No. 2, at Frontenac, was examined and

inspected on the 10th day of July, 1891, and found in first-class condition, and carrying 60 pounds pressure.

N. W. HENDERSON.

To State Mine Inspector: I hereby certify that the two boilers used by the Cherokee and Pittsburg Coal and Mining Company at their shaft No. 2, at Frontenac, Crawford county, Kas., were examined and inspected on the 7th day of June, 1890, and found to be in good condition; average pressure, 60 pounds.

N. W. HENDERSON.

To State Mine Inspector: I hereby certify that the four boilers used by the Cherokee and Pittsburg Coal and Mining Company at their shaft No. 4, at Chicopee, Crawford county, Kas., were examined and inspected on the 15th day of May, 1890, and found to be in good condition; average pressure, 65 pounds.

N. W. HENDERSON.

Report from J. H. Durkee Coal Company:

To State Mine Inspector: I hereby certify that the boiler used by the J. H. Durkee Coal Company at their shaft No. 1 was examined and inspected on the 26th day of December, 1891, and found in good working condition. JOHN SHAW, *Engineer*.

Report from the Kansas and Texas Coal Company:

To State Mine Inspector: I hereby certify that the boiler used by the Kansas and Texas Coal Company at their shaft No. 17, Litchfield, Kas., was examined and inspected on the 21st day of February, 1891, and found safety-valve, blow-off, and gauge-cocks clear, and boiler in good condition. Pressure allowed, 80 pounds.

D. RAMSEY, *Superintendent*.

To State Mine Inspector: I hereby certify that the boiler used by the Kansas and Texas Coal Company at their mine No. 18, Weir City, Kas., was examined and inspected on the 22d day of February, 1891, and found steam-gauge correct, gauge-cocks and safety-valve clear. Pressure allowed, 80 pounds. Condition of boiler, good.

D. RAMSEY, *Superintendent*.

To State Mine Inspector: I hereby certify that the boiler used by the Kansas and Texas Coal Company at their mine No. 20, Pittsburg, Kas., was examined and inspected on the 21st day of February, 1891, and found in good condition; safety-valve, blow-off and gauge-cocks all free; pressure allowed, 80 pounds.

D. RAMSEY, *Superintendent*.

To State Mine Inspector: I hereby certify that the boiler used by the Kansas and Texas Coal Company at their mine No. 22, Litchfield, Kas., was examined and inspected on the 22d day of February, 1891, and found in good condition; safety-valve in good condition, and set to blow at 85 pounds; steam-gauge and gauge-cocks clear; pressure allowed, 85 pounds.

D. RAMSEY, *Superintendent*.

To State Mine Inspector: I hereby certify that the boiler used by the Kansas and Texas Coal Company at their mine No. 23, Weir City, Kas., was examined and inspected on the 22d day of February, 1891, and found in good condition; safety-valve works free at 80 pounds; gauge-cocks and blow-valves clear; pressure allowed, 80 pounds.

D. RAMSEY, *Superintendent*.

To State Mine Inspector: I hereby certify that the boiler used by the Kansas and Texas Coal Company at their mine No. 28, at Pittsburg, Kas., was examined and inspected on the 21st day of February, 1891, and found to be in good condition; steam-gauge, safety-valve and gauge-cocks clear; pressure allowed, 85 pounds.

D. RAMSEY, *Superintendent*.

Report from the Wear Coal Company :

To the Wear Coal Company, Pittsburg, Kas.: The Hartford Steam Boiler Inspection and Insurance Company make the following report of the condition of your steam boiler, inspected on the 2d day of December, 1891, by Inspector E. Sullivan, at mine No. 2: Our inspector made an internal inspection of your boiler, finding it in good condition, being well made and braced, and of good material. The fittings and attachments are all properly connected. Safety-valve set at 100 pounds.

C. C. GARDINER, *General Agent.*

Report from the Western Coal and Mining Company :

To the Western Coal and Mining Company, Fleming, Kas.: The Hartford Steam Boiler Inspection and Insurance Company make the following report of the condition of your steam boilers, inspected on the 3d day of December, 1891, by Inspector E. Sullivan: Mine No. 2, two boilers; mine No. 3, one boiler. I examined the above boilers by the "hammer test" and report them in good condition.

EDWIN SULLIVAN, *Inspector.*

To the Western Coal and Mining Company, Minden, Kas.: The Hartford Steam Boiler Inspection and Insurance Company make the following report of the condition of your steam boiler, inspected on the 30th day of November, 1891, by Inspector E. Sullivan: One boiler at mine No. 4, opposite Minden, Mo., in State of Kansas. I examined the above boiler by the "hammer test" and report it in good condition.

EDWIN SULLIVAN, *Inspector.*

To the Western Coal and Mining Company, Minden, Kas.: The Hartford Steam Boiler Inspection and Insurance Company make the following report of the condition of your steam boiler, inspected on the 26th day of May, 1891, by Inspector E. Sullivan: Mine No. 4, one boiler. I have examined the above boiler by the "hammer test" and report it in good condition.

EDWIN SULLIVAN, *Inspector.*

To the Western Coal and Mining Company, Fleming, Kas.: The Hartford Steam Boiler Inspection and Insurance Company make the following report of the condition of your steam boilers, inspected on the 25th day of May, 1891, by Inspector E. Sullivan: Mine No. 2, two boilers; mine No. 3, one boiler. I examined the above boilers by the "hammer test" and report them in good condition.

EDWIN SULLIVAN, *Inspector.*

LEAVENWORTH COUNTY.

Report from Penitentiary coal mine:

To State Mine Inspector: I hereby certify that the four boilers used by the Penitentiary coal mine at their main-shaft boiler room, at Lansing, Kas., were examined and inspected on the 28th day of September, 1891, and found in first-class condition, and carrying 80 pounds of steam.

THOMAS GIBSON.

To State Mine Inspector: I hereby certify that the four boilers used by the Penitentiary coal mine at their air-shaft boiler room, at Lansing, Kas., were examined and inspected on the 14th and 24th days of September, 1891, and found in first-class condition, and carrying 80 pounds of steam.

ED. GOLIGHTLY.

LINN COUNTY.

Report from Mine Creek Coal Company:

To State Mine Inspector: I hereby certify that the boiler used by the Mine Creek Coal Company at their shaft No. 1, Jewett Station, Kas., was examined and inspected on the 26th day of July, 1891, and found in excellent condition; pressure made, 125 pounds.

WM. HAMILTON, *Engineer.*

REPORTS AS TO VENTILATION.

The following reports of ventilation, as to number of cubic feet of air at intake, at face of gangway, and at outlet, have been sent to this office:

REPORT OF VENTILATION.

LOCAL NAME OF EACH SPLIT.	No. cubic feet in intake.	No. cubic feet in face of gangway.	No. cubic feet at outlet.
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REPORT OF PENITENTIARY MINE FOR MONTH OF JUNE, 1891.

Signed by R. M. Lamm, inside foreman.

North intake, main shaft	15,840	.....	.....
South intake, main shaft.....	14,880	.....	.....
North outlet, near air shaft.....	.....	.....	16,640
East outlet, near air shaft.....	.....	.....	18,020
Totals for first week.....	30,720	.....	34,660
North intake.....	17,160	.....	.....
South intake.....	14,880	.....	.....
North outlet, near air shaft .....	.....	.....	15,080
East outlet, near air shaft.....	.....	.....	18,550
Totals for second week.....	32,040	.....	33,630
North intake.....	15,180	.....	.....
South intake.....	12,480	.....	.....
North outlet.....	.....	.....	13,520
East outlet.....	.....	.....	14,840
Totals for third week.....	27,660	.....	28,360

REPORT OF PENITENTIARY MINE FOR MONTH OF JULY, 1891.

Signed by R. M. Lamm, inside foreman.

North intake, main shaft.....	19,140	.....	.....
South intake, main shaft.....	13,440	.....	.....
North outlet, near air shaft.....	.....	.....	17,160
East outlet, near air shaft.....	.....	.....	16,960
Totals for first week.....	32,580	.....	34,120
North intake.....	15,180	.....	.....
South intake.....	12,960	.....	.....
North outlet.....	.....	.....	13,000
East outlet.....	.....	.....	15,370
Totals for second week.....	28,140	.....	28,370
North intake.....	16,500	.....	.....
South intake.....	14,400	.....	.....
North outlet.....	.....	.....	15,600
East outlet.....	.....	.....	18,550
Totals for third week.....	30,900	.....	34,150
North intake.....	15,840	.....	.....
South intake.....	12,000	.....	.....
North outlet.....	.....	.....	13,520
East outlet.....	.....	.....	15,370
Totals for fourth week ¹	27,840	.....	28,890

¹ Temperature, 82° on surface; sultry.

REPORT OF VENTILATION—CONTINUED.

LOCAL NAME OF EACH SPLIT.	No. cubic feet in intake.	No. cubic feet in face of gangway.	No. cubic feet at outlet.
REPORT OF PENITENTIARY MINE FOR MONTH OF AUGUST, 1891. Signed by R. M. Lamm, inside foreman.			
North intake, main shaft.....	16,500		
South intake, main shaft.....	15,360		
North outlet, near air shaft.....			14,560
East outlet, near air shaft.....			16,430
Totals for first week.....	31,860		30,990
North intake.....	13,860		
South intake.....	11,040		
North outlet.....			15,600
East outlet.....			13,780
Totals for second week.....	24,900		29,380
North intake.....	15,840		
South intake.....	13,920		
North outlet.....			15,600
East outlet.....			16,640
Totals for third week.....	29,760		32,240
North intake.....	17,820		
South intake.....	15,800		
North outlet.....			17,680
East outlet.....			19,610
Totals for fourth week ¹	33,620		37,290

¹ Temperature, 72° on surface.

REPORT OF PENITENTIARY MINE FOR MONTH OF SEPTEMBER, 1891.

Signed by R. M. Lamm, inside foreman.

North intake, main shaft.....	16,500		
South intake, main shaft.....	15,800		
North outlet, near air shaft.....			20,800
East outlet, near air shaft.....			19,610
Totals for first week ¹	32,300		40,410
North intake.....	13,200		
South intake.....	14,880		
North outlet.....			14,560
East outlet.....			15,370
Totals for second week ²	28,080		29,930
North intake.....	14,520		
South intake.....	14,400		
North outlet.....			14,560
East outlet.....			15,900
Totals for third week.....	28,920		30,460
North intake.....	13,200		
South intake.....	14,880		
North outlet.....			14,560
East outlet.....			15,900
Totals for fourth week ³	28,080		30,460

¹ Temperature, 70° on surface.² Warm; falling barometer.³ Temperature, 83°; sultry.

REPORT OF W. C. & M. Co.'s No. 4 MINE FOR MONTH OF NOVEMBER, 1891.

Signed by Wm. McGinnis, inside foreman.

North side of shaft.....	5,600	5,400	5,900
South side of shaft.....	5,800	5,600	6,100
Totals for first week.....	11,400	11,000	12,000

REPORT OF VENTILATION — CONCLUDED.

LOCAL NAME OF EACH SPLIT.	No. cubic feet in intake.	No. cubic feet in face of gangway.	No. cubic feet at outlet.
REPORT OF W. C. & M. Co.'s MINE — <i>Concluded.</i>			
North side of shaft.....	5,600	5,300	5,800
South side of shaft.....	5,700	5,600	5,900
Totals for second week.....	11,300	10,900	11,700
North side of shaft.....	5,100	4,900	5,200
South side of shaft.....	5,300	5,100	5,400
Totals for third week.....	10,400	10,000	10,600
North side of shaft.....	5,700	5,500	6,000
South side of shaft.....	5,800	5,400	6,100
Totals for fourth week.....	11,500	10,900	12,100
Averages for month.....	11,100	10,700	11,600

REPORT OF MINE CREEK COAL CO. FOR MONTH OF AUGUST, 1891.

Signed by Hugh Reed, inside foreman.

West side.....			4,878
East side.....			3,078
Total.....			7,956

REPORT OF COLUMBUS MINE FOR MONTH OF JUNE, 1891.

Signed by Christopher Newland, inside foreman.

Second south.....	¹		¹
Third south.....	¹		¹
Second north.....	¹		¹
Third north.....	¹		¹
Totals.....	6,000		7,700

¹ Details not given.

LEAD AND ZINC MINING.

This important industry is carried on in the southeast part of Cherokee county. The mines are worked on a different plan from coal mines, as the vein is not regular, and is generally followed up or down, whichever direction it may go. There is very little system used, as the plan of leasing allows every one to work the ground according to his own idea on the matter.

Companies or individuals lease a number of acres of land, and subdivide it into mining lots 200 feet square, which they sublet to miners, who enter into contracts with original lessee to mine the ore for a certain per cent., the price to be fixed according to the selling rate of lead in the St. Louis market.

The zinc ore is generally found in the same mines intermingled with the lead. Both are sent to the top as they are found, and are cleaned and separated by a system of what is termed "jigging." The price of zinc, when cleaned and ready for market, ranges from \$14 to \$24 per ton. The miner pays from 10 to 20 per cent. of the output to the owner of the land for royalty.

A great many accidents occur in these mines. I endeavored to get a record of them, but could find no one who could inform me with any certainty.

The following tables give the total output of lead and zinc from the Galena and Empire City mining district, in Cherokee county:

TABLE showing output and estimated value of lead ore produced in Galena and Empire City district in 1891.

NAME OF COMPANY.	<i>Pounds of lead ore produced.</i>	<i>Estimated value of output.</i>
South Side Mining and Manufacturing Company	1,403,344	\$35,083
Galena Lead and Zinc Company	794,780	19,869
Clement Mining Company	489,700	12,242
Illinois Lead and Zinc Company	151,670	3,791
Empire Mining Company	114,026	2,850
Windsor Mining Company	399,490	9,987
Ohio Lead and Zinc Mining Company	460,300	11,507
Maggie Taylor	199,580	4,989
Ol. Sparks	277,951	6,948
Central Company	430,800	10,770
J. M. Cooper & Co.	677,800	16,945
Queen Bee	24,585	614
Kansas Lead and Zinc Company	158,865	3,971
Annie Laurie	105,040	2,626
Cornwall Company	113,550	2,838
Murphy & Murphy	71,450	1,786
Wyandotte Company	1,910	47
Carthage Company	23,710	592
Mississippi Company	131,350	3,283
Bonanza	27,200	680
Neutral	1,147,319	28,682
Totals	7,204,420	\$180,100

TABLE showing output and estimated value of zinc ore produced in Galena and Empire City district in 1891.

NAME OF COMPANY.	Pounds of zinc ore produced.	Estimated value of output.
South Side Mining and Manufacturing Company	7,154,800	\$71,548
Galena Lead and Zinc Company	4,079,337	40,793
Clement Mining Company	4,965,700	49,657
Illinois Lead and Zinc Company	2,412,935	24,129
Empire Mining Company	2,403,891	24,038
Windsor Mining Company	2,250,375	22,503
Ohio Lead and Zinc Mining Company	2,336,332	23,363
Euclid Company	1,937,502	19,375
Maggie Taylor	843,572	8,435
Ol. Sparks	858,622	8,586
Central Company	934,802	9,348
J. M. Cooper & Co.	651,380	6,513
Queen Bee	555,866	5,558
Banner Mining Company	668,870	6,688
Midland Company	500,000	5,000
Kansas Lead and Zinc Company	475,692	4,756
Annie Laurie	424,480	4,244
Cornwall Company	409,717	4,097
Murphy & Murphy	355,670	3,556
Wyandotte Company	220,258	2,202
Templar Company	445,830	4,458
Carthage Company	16,330	163
Bonanza	126,220	1,262
Neutral	5,499,210	54,992
Totals	40,527,391	\$405,273

The following comparative table shows what proportion the lead and zinc produced in this district in 1891 bears to the total output of the United States for the same year:

ITEMS.	Output in United States in 1891—tons of 2,000 pounds.	Output in Kansas in 1891—tons of 2,000 pounds.	Per cent. of total output produced in Kansas.
Lead	205,488	3,602	1 $\frac{3}{4}$
Zinc	76,500	20,263	26 $\frac{1}{3}$

From this table, it will be seen that Kansas produced more than one-fourth of the total zinc output of the United States, and the industry is yet in its infancy.

From a review of the lead and zinc district written for the local press, I quote the following extract:

The year just closed has been marked in the lead and zinc industry as one of low prices, and the output of both ores has been much less than it would have been had fair prices prevailed. . . . All the mining companies of Galena have devoted much time to prospecting during the year 1891, many companies having sunk very deep prospect shafts. The South Side, Windsor and Clement companies have proven that the heaviest bodies of ore lie deeper than has yet been mined. . . . Many new tracts of land are now being developed, enough prospecting having been done to show that they are ore-bearing lands, and when they are properly opened the Galena and Empire City mines will be the leading lead and zinc producers of the Southwest.

KANSAS SALT MINES.

The salt mining industry includes two shafts in Kingman county. The Kingman Rock Salt Company was the first in the State to sink a shaft. The Kingman Crystal Rock Salt Company has the largest shaft of any kind in the State, the same being 12x24 feet in the clear, with four compartments. The shaft is over 1,000 feet deep, and well equipped with machinery for a large output. There are also several large salt wells at Kingman. The Lyons Rock Salt Company, at Lyons, Rice county, has a shaft 1,120 feet deep. This company mine, or under-cut, the salt with two Ingersoll and one Harrison mining machines, run by compressed air. These mining machines do good work, notwithstanding that the under-cutting is very hard. A 55-horse-power Norwalk air compressor furnishes the motive power to run the mining machines and an Ingersoll drilling machine. There is also a 75-horse-power engine to run the machinery, which makes 12 grades of salt. A pair of 18x32 inch cylinder engines are used for hoisting; 1½ inch steel ropes are used, attached to single cages, carrying mine cars holding two tons of salt each. Some of the large lumps of salt, as they come from the mine, are loaded into box cars, and shipped to the cattle ranches for stock purposes. First-class machinery is used to manufacture the salt into a marketable commodity.

The Lyons Rock Salt and Mineral Company is sinking a shaft near the city of Lyons. They were down about 700 feet at my visit.

The Royal Salt Company, at Kanopolis, Ellsworth county, has a good mine. It is well equipped with a pair of 24x36 inch cylinder engines, first motion, attached to a conical drum. The engine which drives the salt manipulating machinery is a very fine "Buckeye," automatic cut-off, and gives good satisfaction. Ventilation is maintained by a fan 16 feet in diameter and 8 feet width of blade, and can be used as an upcast or downcast at any time.

Having no power to officially inspect these mines, nor any means of collecting the statistics of the output, neither are here given.

GASES MET WITH IN COAL MINES.

CARBONIC ACID GAS.—Its symbol is CO_2 ; that is, it is composed of one atom of carbon and two atoms of oxygen. Its specific gravity is 1.524; therefore it is half as heavy again as air, and for that reason, before being mixed with air, it rests on the floors of mines. It is called “choke-damp,” “black damp,” and “stythe” by the miners, and is colorless and invisible, having a sharp odor and taste. It is composed of 72.73 per cent. by weight of oxygen, and 27.27 per cent. by weight of carbon. Being a direct product of combustion, when any substance containing carbon is burned in the air, it cannot support combustion. On the contrary, it is unflammable, extinguishes combustion, and a common test as to its presence is given by a light going out if placed in air containing 10 per cent. of carbonic acid gas. Air containing 3 or 4 per cent. of carbonic acid gas is unfit to breathe, and air containing only .35 per cent. of it is very unwholesome when inhaled. Air containing 8 to 10 per cent. of this gas is fatal to life. During animal respiration, carbonic acid gas is given off from the lungs; it is yielded naturally in some mines, and is produced by burning lights or lamps, and from exploding gunpowder. The amount of carbonic acid gas yielded in a mine from animal respiration or as a product of combustion is easily dealt with by the ordinary means of ventilation. In mines where it issues from the strata, or is liberated from water which may have absorbed it in penetrating into the mine, the removal of the gas is more difficult, on account of the large quantity to be carried away.

Carbonic acid gas is most commonly found in dip workings, on the floors of roadways, or at the foot of steepes in rising return air-ways, owing to its specific gravity. Many lives have been lost where men have descended wells and shafts without first taking the precaution of testing them for gas. Sumps of pits, wells or abandoned shafts should be tested to see if this gas is present, before any one descends. Its presence in dangerous quantities is known by lowering a lighted lamp or candle into it, as the light will be immediately extinguished.

CARBONIC OXIDE.—Its symbol is CO , one atom of carbon and one of oxygen. By the miners it is called “white damp.” It is colorless, tasteless, and poisonous. It has a slight and peculiar odor. It does not, in the ordinary sense, support combustion; yet, singular as it may seem, candles or lamps will burn in a mixture of it with air, which at once destroys life. It is more poisonous than carbonic acid gas; air containing 1 per cent. is at once fatal to warm-blooded animals breathing it. The effects of a trace of it in the air, if breathed, are a sensation of giddiness, sickness, debility, and

fainting fits. The report of the French fire-damp commission gives the temperature of ignition of this gas at 1,202 degrees Fahr. It is found in mines as a result of exploding gunpowder, because it is a product of the explosion, and from the combustion of coal or wood under certain conditions, particularly where ventilation is deficient. In mines where the air is good, and constantly maintained so, this gas is not met with. In mines insufficiently ventilated, and where gunpowder is freely used for blasting, the circumstances are favorable for the presence of carbonic oxide gas. The fumes then given off by blasting have a most disagreeable odor, greatly irritating the organs of respiration, and sometimes proving fatal to those who inhale them.

The commissioners appointed to inquire into the accidents in mines in England state in their report that the presence of this dangerous gas in after-damp has never been clearly proved, but its existence is possible in that resulting from an explosion consequent on an outburst of gas. When a coal seam, or the gob, is on fire, the gas is produced in large quantities owing to the imperfect combustion, through efforts made to exclude the air from the fire.

CARBURETTED HYDROGEN, or light carburetted hydrogen, is the "fire-damp" or inflammable gas met with in mines; its symbol is CH_4 . Its specific gravity is .562; it is, therefore, more than half as heavy as air. Owing to its lightness, its tendency is to rest against the roofs of mines and in cavities, unless it is displaced by air currents acting upon it. By a property all gases have, called *diffusion*, it gets mixed with air. It is a colorless, inodorous gas, scarcely soluble in water, and does not support combustion or respiration. It is not a poisonous gas, but if breathed in its pure state it causes death, because it does not support respiration. If mixed with twice its own volume of air, it may be breathed for some time without much injury resulting.

When this gas forms 1 part to 30 of air-and-gas mixture, its presence may be detected by the "cap" formed on the flame of a safety lamp. When it forms 1 part out of 13 of the mixture, it may be ignited by a flame, and the whole of the mixture will be converted into a mass of flame, but its force will be feeble. The explosive force, however, increases as the ratio of the gas to air increases, from 1 to 13, to 1 to 8 or 9, at which point it attains its greatest force, but explosions will occur with a diminishing force as the ratio of the gas to air passes from 1 to 8 or 9, to 1 to 5, after which the mixture, instead of exploding, extinguishes the flame of lamps.

The French fire-damp commission gives the temperature of ignition of this gas at 1,436 degrees Fahr., but the report of the Prussian commission gives a much higher temperature of ignition, as silver and copper wires were fused without igniting it.

Mixtures of fire-damp and air may become altogether inexplosive if sufficient carbonic acid gas or free nitrogen be allowed to mix with them; even

small quantities of these gases, when present in the mixture, lessen the explosive force on ignition.

AFTER-DAMP, resulting from an explosion of fire-damp and air, consists of 71.2 per cent. of free nitrogen, 9.6 per cent. of carbonic acid gas, and 19.2 per cent. of steam; or, in round numbers, out of 10 parts, after-damp contains 7 of nitrogen, 1 of carbonic acid gas, and 2 of steam. Directly after the explosion the steam condenses, and there is then left, out of $8\frac{1}{2}$ parts, about $7\frac{1}{2}$ parts of nitrogen and 1 of carbonic acid gas. Breathing after-damp soon causes death, and many who escape the force of a fire-damp explosion in mines fall victims to the deadly after-damp.

SULPHURETTED HYDROGEN.—Its symbol is H_2S , two atoms of hydrogen and one atom of sulphur. Its specific gravity is 1.171, and it is rather heavier than air. It is this gas which imparts to rotten eggs their offensive smell, and it may be recognized by its odor. It is colorless, and very poisonous, and, even when largely diluted with air, acts as a powerful narcotic. It does not support combustion nor respiration, but is itself combustible, and burns with a blue flame. The water which drains through decomposed pyrites has a muddy, iron color, and exercises an injurious effect on iron rails, pumps, and upon articles made of leather, such as shoes, pump leather, etc. This gas is found in mines as a result of the decomposition of pyrites or some animal substance containing sulphur, and also as a result of exploding gunpowder. The exact proportion of sulphuretted hydrogen fatal to life is not known, but it produces fainting fits when present in very small proportions—different authorities give from .5 to 4 per cent. It is very rarely met with in mines, except as a part of a mixture containing several gases.

DIFFUSION OF GASES.—This property is the influence of a force powerful enough to resist the influence of gravitation, and cause a blending or mixing of gases through each other, notwithstanding their different specific gravities. When light and heavy gases are exchanging places, a larger volume of the light gas passes in one direction than of the heavy gas in the other. When these gases have become thus mixed they will remain so. It is this diffusive force which maintains the atmosphere uniform in constitution. The property of diffusion is only thoroughly carried out when the gases are still. It has little influence for good on the ventilation of mines, and is inadequate as a means of rendering harmless the noxious gases there met with. On the contrary, it is a means of forming inflammable mixtures of gas and air in all quiet nooks and cavities into which fire damp finds its way.

TREATMENT OF PERSONS OVERCOME BY GAS.—There are quite frequently cases occurring in mines where the men employed therein are prostrated by one or more of the gases common to such places. It is not always possible to obtain the aid of a physician. Instead of crowding around the disabled miner in sympathetic idleness, those who form the onlookers

should be able to at once address themselves to the best and quickest way of restoring the patient. The following directions, taken from the "Colliery Engineer Pocket-book," are submitted with the hope that they may prove useful in case of accidents:

Miners are exposed to asphyxia when the circulation of the air is not sufficiently active, when the mine exhales a quantity of deleterious gas, when they imprudently penetrate into old or abandoned workings, and when there is an explosion. The symptoms of asphyxia are sudden cessation of breathing, of the pulsations of the heart, and of the action of the senses; the countenance is swollen, and marked with reddish spots; the eyes are protruded, the features are disturbed, and the face is often livid. Such are the most common symptoms noticeable in persons who are overcome by poisonous gases.

The first and best remedy to employ, and in which the greatest confidence ought to be placed, is the renewal of the air necessary for respiration. In succession —

1. Promptly withdraw the person affected from the deleterious place, and expose him to pure air.

2. Loosen the clothes round the neck and chest, and dash cold water on the face and chest.

3. Attempts should be made to irritate the nose on the inside with the feathered end of a quill, which should be gently moved in the nostrils of the insensible person, or to stimulate it with a bottle of volatile alkali under the nose.

4. Keep up the warmth of the body, and apply mustard plasters over the head and around the ankles.

5. If these means fail to produce respiration, Doctor Sylvester's method of producing artificial respiration should be tried, as follows: Place the patient on the back, on a flat surface inclined a little upwards from the feet; raise and support the head and shoulders on a small, firm cushion, or folded article of dress placed under the shoulder-blades; draw forward the patient's tongue and keep it projecting beyond the lips; an elastic band over the tongue and under the chin will answer this purpose, as it will retain the tongue in that position; remove all tight clothing from about the neck and chest, especially suspenders, should the patient wear them; then, standing at the patient's head, grasp the arms just above the elbows, and draw the arms gently and steadily upwards above the head, and keep them stretched upwards for two seconds (by this means air is drawn into the lungs); then turn down the patient's arms and press them gently and firmly for two seconds against the sides of the chest (by this means the air is pressed out of the lungs).

Repeat these measures alternately, deliberately, and perseveringly, about 15 times in a minute, until a spontaneous effort to respire is perceived; immediately upon which cease to imitate the movements of breathing, and proceed to induce circulation and warmth.

6. To promote warmth and circulation, rub the limbs upward with firm, grasping pressure and energy, using handkerchiefs, flannels, or other substitutes which may be at hand. Apply hot flannels, bottles of hot water, heated bricks, etc., to the pit of the stomach, the armpits, between the thighs, and to the soles of the feet.

7. On the restoration of life, a teaspoonful of warm water should be given; and then, if the power of swallowing has returned, small quantities of wine, warm brandy and water or coffee should be administered.

8. These remedies should be promptly applied, and as death does not certainly appear for a long time, they ought only to be discontinued when it is clearly confirmed. Absence of the pulsations of the heart is not a sure sign of death, neither is the want of breathing.

RECOMMENDATIONS.

In the Fourth Report of the State Mine Inspector, the writer recommended some amendments to paragraph 3847 of the Revised Statutes of 1889, whereby some means should be on hand for the workmen to get out of a mine where a second opening had been made, there being no provision in the mining law for this purpose since 1885, when the following section of the law was repealed. Section 4, chapter 117, Session Laws 1883, read as follows:

SEC. 4. Where the natural strata are not safe, every working, pumping and escapement shaft shall be securely case-lined, or otherwise made secure, and all escapement shafts shall be provided with ladders, securely fastened, so as to bear the combined weight of not less than 10 men ascending or descending the same; and where ladders cannot be conveniently used, other safe means of hoisting the persons employed in any such coal mine shall be kept ready, so as to be available in case of accident to the regular hoisting shaft or machinery in use at the same.

The elimination of this section from the mining law rendered that part of it which provided for a construction of a second opening almost useless, as a hole in the ground, called a "second opening," would be of very little service if there were no means provided for getting out of the same.

Paragraph 3860, General Statutes of 1889, provides as follows:

No person under 12 years of age shall be allowed to work in any coal mine, nor any minor between the ages of 12 and 16 years, unless he can read and write, and furnish a certificate from a school-teacher, which shall be kept on file, showing that he has attended school at least three months in the year; and in all cases of minors applying for work, the agent of such coal mine shall see that the provisions of this section are not violated; and upon conviction of a willful violation of this section of this act, the agent of such coal mine shall be fined in any sum not to exceed \$50 for each and every offense.

As a matter of fairness, the agent of a coal mine who is liable to a fine should have some protection, but at present he has none, having to depend on the veracity of these minors, or their parents, who seek employment for them. Therefore it would be wise to add a provision to this section requiring the parents or guardians of all minors applying for work to make affidavit to the boys' age before they were given work by the pit boss or agent of the mine.

In my introduction to this report, I call attention to the fact that there is complaint from various sources that the Mine Inspector does not visit mines as often as is desired. The appropriation under the present law does not pay the salary and expenses of one man; therefore, there is no pay provided for assistance to be employed to perform the duties required by the

law as to making visits to the mines, collecting the statistics relating to the same, and giving the necessary care to the accidents that occur. Likewise no provision is made for postage, expressage, or the multifarious expenses which occur daily, every expense having to be paid out of the Inspector's salary — including traveling and livery hire. In other States having mining interests, the Inspector is provided with a fund for all expenses, said fund being available for use monthly, or quarterly, at furthest, and in addition has a clerk to assist with the correspondence and the compiling of his report. The mining interests of this State are too large for one inspector to attend all the duties incumbent upon him in a satisfactory manner. I would therefore recommend that the Legislature provide for an Assistant Mine Inspector or divide the State into two inspection districts.

The workmen in the salt, lead, zinc and gypsum mines of this State should not be overlooked, as it is the duty of the State to protect the lives and health of the miners employed in these industries as well as in the coal mines. I think it is very essential that the benefits of the mining law should be extended to them all.

The collection of statistics heretofore has been quite a burden and cause of expense to this office. Paragraph 3857, General Statutes of 1889, makes it the duty of coal operators to make quarterly statements to the Inspector of the amount of coal mined, and all persons employed in and around the mine. While most of the large companies comply with this provision of the law, many of the smaller mines and the strip banks do not, and it is impossible to get this data except by personal visits. As there is no penalty attached to this provision, it cannot be strictly enforced. I would recommend that a small fine be provided as a penalty, and that the law be made to include strip-bank operators as well as mines. In order to make the statistics of the output of coal complete, it is necessary that the reports should come in as regularly as possible.

The mining interests of the State are becoming so important that the question of the qualifications and ability of the Mine Inspector should be put beyond a cavil or doubt. Therefore, I would suggest the passage of a law embodying the features set forth in the following from the mining law of Iowa:

The Executive Council shall appoint a board of examiners composed of two practical miners, two mine operators, and one mining engineer, who shall have at least five years' experience in his profession. The members of said board shall be of good moral character, and citizens of the United States and State of Iowa, and they shall, before entering upon their duties, take the following oath (or affirmation): "I, ———, do solemnly swear (or affirm) that I will perform the duties of examiner of candidates for the office of Mine Inspector to the best of my ability, and that in recommending any candidate I will be governed by the evidence of qualification to fill the position under the law creating the same, and not by any consideration of political or personal favors; that I will grant certificates to candidates according to their qualifications and the requirements of the law." They shall hold their office for two years.

Said board shall meet biennially, on the first Monday in April of each even-numbered year, except that for the year 1888 said board shall meet on the second Monday, in the office of the State Mine Inspector in the Capitol, and they shall publish in at least one newspaper published in each mining district of the State the date fixed by them for the examination of candidates. They shall be furnished with the necessary stationery and other necessary material for said examination, in the same manner as other State officers are now provided. They shall receive as compensation the sum of \$5 per day for time actually employed in the duties of their office, and actual traveling expenses. The said compensation and expenses shall be paid in the same manner as the salaries and expenses of other State officers are now paid: *Provided*, That in no case shall the per diem received by any member exceed \$50 for each biennial session.

Certificates of competency shall be granted only to citizens of the United States and State of Iowa, of good moral character, not less than 25 years of age, who shall have at least five years' experience in the mines, and who shall not have been acting as agent or superintendent for any mine for at least six months prior to their appearance for examination.

The examination of candidates for the office of Mine Inspector shall consist of oral and written questions in theoretical and practical mining and mine engineering, on the nature and properties of noxious and poisonous gases found in mines, and on the different systems of working and ventilating of coal mines. The candidates shall not be allowed to have in their possession, at the time of their examination, any books, memoranda or notes to be used as aids in said examination. The board of examiners shall give to all persons examined who, in their judgment, possess the requisite qualifications, certificates of such qualification; and from the persons holding such certificates the Governor shall appoint the State Mine Inspector.

INDEX.

A.

ACCIDENTS.....	PAGE.
Non-fatal, table and details.....	55-68
Fatal, table and details.....	55-61
	61-68

B.

BOILER INSPECTION.....	69-71
Cherokee county.....	69
Crawford county.....	69-71
Leavenworth county.....	71
Linn county.....	71

G.

GASES MET WITH IN COAL MINES.....	78-81
Carbonic acid gas.....	78
Carbonic oxide.....	78, 79
Carburetted hydrogen.....	79, 80
After-damp.....	80
Sulphuretted hydrogen.....	80
Diffusion of gases.....	80
Treatment of persons overcome by gas.....	80, 81

L.

LEAD AND ZINC MINING.....	75, 76
Lead ore, output and value, table.....	75
Zinc ore, output and value, table.....	76

M.

METHODS OF WORKING COAL.....	16, 17
------------------------------	--------

R.

RECOMMENDATIONS.....	82-84
REPORT.....	6-15
Caution to shot-firers.....	7
Notice as to handling of powder.....	8, 9
Change in mining law.....	9-12
Escapement shaft at Leavenworth.....	12-14
Complaints from salt and gypsum mines.....	14

S.

SALT MINES.....	77
STATISTICS AND DESCRIPTIONS OF COAL MINES.....	18-51
Bourbon county.....	18
Chautauqua county.....	18
Cherokee county.....	18-23
Coffey county.....	23
Crawford county.....	23-27
Cloud county.....	27, 28
Ellsworth county.....	28
Franklin county.....	28-31
Labette county.....	31

STATISTICS AND DESCRIPTION OF COAL MINE—*Concluded:*

Leavenworth county.....	31-34
Lincoln county.....	34
Linn county.....	34-37
Lyon county.....	37
Mitchell county.....	37
Nemaha county.....	38
Osage county.....	38-50
Republic county.....	51
Russell county.....	51
Shawnee county.....	51
SUMMARY.....	52-54
Employés, number of, in coal mines, by counties, and total in State, table.....	52
Output and value of coal, by counties, and total for State, table.....	53
Output of coal for State since 1885, table	53,54

V.

VENTILATION, REPORTS AS TO.....	72-74
Penitentiary mine.....	72,73
W. C. & M. Co.'s mine No. 4	73,74
Mine Creek Coal Co.....	74
Columbus mine.....	74

LETTER OF TRANSMITTAL.

OFFICE OF THE STATE INSPECTOR OF COAL MINES,
PITTSBURG, KAS., December 31, 1893.

To his Excellency L. D. Lewelling, Governor of Kansas:

DEAR SIR—In compliance with the requirements of the general mining laws of the state of Kansas, I have the honor to submit the sixth annual report of the State Inspector of Coal Mines.

Respectfully,

A. C. GALLAGHER,
State Inspector of Coal Mines.

PB1006

CONTENTS.

REPORT.....	1
STATISTICS.....	2
Atchison county.....	2
Bourbon “.....	2
Chautauqua “.....	4
Cherokee “.....	5
Cloud “.....	19
Coffey “.....	21
Crawford “.....	21
Ellsworth “.....	44
Franklin “.....	45
Labette “.....	51
Leavenworth “.....	52
Lincoln “.....	58
Linn “.....	60
Lyon “.....	65
Mitchell “.....	65
Nemaha “.....	66
Osage “.....	66
Republic “.....	80
Russell “.....	81
Shawnee “.....	81
SUMMARY OF COUNTIES.....	83
MINERAL PRODUCTION OF AMERICA.....	89
ACCIDENTS—Fatal.....	91
“ —Nonfatal.....	102
STEAM-BOILER INSPECTIONS.....	113
STRIKES.....	119
DUST EXPLOSIONS.....	141
PHILOSOPHY OF VENTILATION.....	148
COAL MINES AND THEIR SUPERINTENDENTS.....	151
RECOMMENDATIONS.....	154
MINING LAWS.....	159
GLOSSARY OF MINING TERMS.....	174
COMPARISON OF COALS.....	179

REPORT.

THIS report contains an account of my duties as State Inspector of Coal Mines from April 1 to December 1, 1893.

Statistics and descriptions of 17 coal-producing counties are herein contained, giving name of operator, name or number of mine, post-office address, number of days worked in 1893, the number of bushels produced by each mine, and the estimated value of same, the number of miners and day hands employed, average price paid per bushel for mining unscreened coal; describes kinds of opening, whether shaft, drift, or slope; shows whether mine has two surface openings or not, depth of each shaft, kind of coal mined, thickness of vein, and system by which coal is mined; describes by what power operated and ventilated, giving divisions of air in each mine; describes whether shaft is connected with railroad or not, and the number of kegs of powder used, and giving a descriptive history of each and every mine in the state; also giving an analysis of the miners' earnings in the four principal coal-producing counties, viz.: Cherokee, Crawford, Osage, and Leavenworth; and a table showing the miners' total receipts and necessary disbursements for each of the four counties, for 1893.

There are 243 coal mines in the state, which gave employment to 9,891 men, producing 72,048,268 bushels, or 2,881,930 tons (short tons), the estimated value of which was \$3,960,331.64. The number of accidents for 1893 were 76—15 fatal, and 61 nonfatal. This would give a ratio of 5,542,174 bushels mined to each fatal accident, and 1,181,119 bushels to each nonfatal accident; 7 of the fatal accidents occurred in Cherokee county, 5 in Crawford, 2 in Leavenworth, and 1 in Shawnee county. Of the nonfatal accidents, 33 occurred in Crawford county, 11 in Osage, 5 in Leavenworth, and 2 in Linn county. Of the 15 fatal accidents, but 5 were practical miners.

In addition to this is a record of boiler inspections and maps or plans of mines; also a history of the strike, or suspension, and an article on coal dust; philosophy of ventilation, a treatise on coal mines and their supervision, general mining law, and a glossary of technical mining terms.

STATISTICS, DESCRIPTION AND INSPECTION OF COAL MINES, BY COUNTIES.

ATCHISON COUNTY.

In this county a new field of coal has been discovered, three miles south of Atchison city, and in exploring this field W. S. F. Donald began operations in November, 1893. The vein has an average thickness of 15 inches, of the finest quality of bituminous coal. The work now in operation is a drift, and extensive preparations are being made to develop the vein. Only a very small amount was produced in 1893—about 2,375 bushels, or .003 per cent. of the total output of the state, its value at the mine being \$213.75. I visited this field the latter part of November, 1893, and found considerable active prospecting in progress. Mr. Binning was sinking a prospect shaft six miles south of the city, near the Missouri river. The same vein has been found about half way between Binning's works and the city, and there is every prospect of its active operation. The mine now in operation is near the Missouri Pacific railroad, and, so far, the most of the work done has been in the way of improvements, such as brushing and timbering the drift, building tipple, etc. Twenty-five men have been employed, under the management of Mr. George Grant, superintendent and pit boss. He is calculating to operate on the "long-wall" system.

BOURBON COUNTY.

Kind of coal, bituminous; thickness, 10 to 18 inches; average depth of coal from surface, 10 feet; total output for 1893, 475,000 bushels, or .659 per cent. of the total output of the state; estimated value, \$33,250.

The coal of Bourbon county is obtained from drift mines and strip banks; nearly the entire output is used for household purposes. None of the mines or strip banks are in connection with the railroads.

The greater part of the mines are operated only in autumn and winter, and employ from one to six miners, who lease the mines from the owners of the land at 1 cent per bushel royalty.

There is no system carried out in developing this vein. Each man mines under any system most convenient whereby he can procure the most coal. They drift under the hill until such time as it becomes impossible for them to mine any longer for want of air, as they have no system of ventilation in the majority of drifts.

Having no boss or superintendent, the mining laws are disregarded, and when requested to comply with the law they abandon many of the drifts and commence operation in some other convenient place. In fall and winter, about 185 men are employed in the various drifts and strip banks in this county.

The following are the names and post-office addresses of drift- and strip-mine operators:

DRIFT-MINE OPERATORS.

Sam. Mitchell, Fort Scott.	W. G. Payne, Fort Scott.
Sam. Civey, Fort Scott.	O. G. Buchanan, Fort Scott.
Harrington & McCullough, Fort Scott.	S. Smallwood, Fort Scott.
Wm. McKinney, Fort Scott.	

STRIP-PIT OPERATORS.

Sam. Osborne, Fort Scott.	Geo. Spillet, Godfrey.
Geo. Keile, Fort Scott.	Thos. Indicott, Godfrey.
Fairman Bros., Fort Scott.	Wm. Simmons, Godfrey.
John Drake, Fort Scott.	Geo. Baker, Godfrey.
Harry Owns, Fort Scott.	Frank Lemer, Fort Scott.

OTHER OPERATORS.

Geo. Ray, Fort Scott.	Henry Wilkinson, Fort Scott.
Ben. Bruce, Fort Scott.	Newton Chase, Fort Scott.
Captain Donalson, Fort Scott.	J. A. Witt, Fort Scott.
Dan. Garret, Fort Scott.	

There are many farmers who strip coal in winter, and haul the same to Fort Scott. They keep no record of the amount produced. The only way in which I could obtain a reliable and an accurate account of the number of bushels sold was by going to the weighmen at the various city scales. The selling price of strip coal, delivered, is from 7 to 10 cents per bushel in summer, and from 8 to 12 in winter. The average stripping in the Fort Scott coal fields is 10 feet. The thickness of vein in strip-bank coal runs from 12 to 20 inches. The coal is of a good quality, and is known as the "Fort Scott red coal."

The only accident reported to me from Bourbon county was the death of Geo. Bolinger, a miner employed at a drift mine one-half mile west of the Wichita shops, Fort Scott. The mine where this accident occurred was operated by one Wm. McKinney.

On the evening of January 23, 1894, Bolinger's room caved in, burying him alive. His pitiful moans could be heard for sometime after his room caved in. The two miners who worked in the same drift could not render any assistance, as there were tons of fallen roof in their way. A rescuing party went to work immediately; but not until the following evening, about 2:30 P. M., could they reach the body. When found, his breast was resting on his right knee. The deceased was born and raised in Bourbon county, Kansas, was 34 years of age, and married. As soon as I was notified, I went to Fort Scott, to inquire into the cause of the fatal accident. No inquest being held, it was almost impossible to ascertain who was to blame, as the drift mine was then abandoned, and each one who knew of the accident told a different story.

Mining around Fort Scott is conducted in a very careless manner. The owners of the land permit anyone who is willing to pay the royalty to go

on and dig for a few months in winter. Having no regular system, they try to produce all the coal possible, and take very little precaution as to safety. Many of the so-called operators have little if any experience in mining.

This fatal accident referred to is not included in table of accidents, as it happened in the beginning of the year 1894. Nevertheless, I considered it was my duty to make mention of it, hoping more caution will be taken in the future, and that the blame of all such accidents will rest on the proper party or parties.

CHAUTAUQUA COUNTY.

The slope mines in Chautauqua county are located near Leeds. They have no railroad connection. Mostly local trade. Average thickness of vein, 16 inches; good slate roof; fire-clay mining; fair sample of bituminous coal; used to sell at 12 and 13 cents per bushel, but sold as low as 9 and 10 cents in the winter of 1893 and 1894; price paid for mining is 7 cents in summer and 9 cents in winter.

During 1893 the mines of this county produced 44,400 bushels, or .062 per cent. of the entire output of the state; estimated value, \$4,400; employing an average of 36 men, averaging 136½ days to the shaft, or about 43 per cent. of the working days of last year—less than half time.

TABLE OF CHAUTAUQUA COUNTY.

ITEM.	Jones & Elliott, Leeds.....	Elliott & Jones, Leeds.....	Snodder & Fields, Leeds.....	Total.....
Number of days worked in 1893.....	150	120	140	410
Number of bushels mined in 1893.....	15,000	10,400	19,000	44,400
Estimated value of output in 1893.....	\$1,500	\$1,040	\$1,900	\$4,440
Average number of miners.....	11	10	12	33
Average number of day hands.....	1	1	1	3
Average number of all employés.....	12	11	13	36
Average price paid per bushel for unscreened coal.....	8	8	8	
Kind of opening—shaft, drift, or slope.....	Slope.	Slope.	Slope.	
Has mine two surface openings?.....	Yes.	Yes.	Yes.	
Kind of coal.....	Bituminous.	Bituminous.	Bituminous.	
Thickness of vein.....	1 ft. 4 in.	1 ft. 3 in.	1 ft. 3 in.	
System—room and pillar or long wall.....	Long wall.	Long wall.	Long wall.	
By what power operated.....	Horse.	Horse.	Horse.	
By what power ventilated.....	Natural.	Natural.	Natural.	
How many divisions of air in mine?.....	1	1	1	
Has mine railroad connection?.....	No.	No.	No.	

Jones & Elliott's slope mine is a horse power. Distance from surface to bottom, 40 feet; average thickness of coal vein, 16 inches; good roof, and fire-clay mining, or under cutting. Most of the coal mined is sold to the farmers and business men in the vicinity. Mine has no railroad connection; the nearest railroad station is Wauneta, on the Missouri Pacific, which is eight miles. Price paid for mining, 7 cents in summer, and 9 cents in winter. Number of miners employed, 9; number of boys employed, 4; mine worked 150 days in 1893.

Joseph Elliott's slope mine is a horse power, located one-fourth mile east

of Leeds; employs 8 miners, and sometimes as many as 14. Miners push their coal to the bottom, and lay their own track in entry and rooms. The operator acts as weigh boss. Only one man is employed on top to do all kinds of general work. Thickness of coal vein, 16 inches; good slate roof and fire-clay mining. Giant powder is used instead of black powder in brushing entries in mine. Mine worked 120 days in 1893. Price paid for mining, 7 cents in summer and 9 cents in winter. Under the head of improvements, an airshaft was sunk, a new pump put in, and 100 feet of entry opened.

The Swafford & Fields slope mine is located about nine miles southeast of Grenola. From 9 to 12 men are employed during the year. At this mine, also, miners push their own coal to the bottom and lay their own track. Only one man is employed at the tippie for the purpose of dumping, weighing, trimming cars, etc.

Thickness of vein, about 16 inches; good slate roof, and fire-clay mining. Brushing is done with giant powder. The price paid for mining is 7 cents per bushel in summer and 9 in winter.

The mine was improved by opening up 100 feet of air way and the introduction of a pump.

The mine has no railroad connection. No coal was shipped during the year; coal sold for household purposes. Mine worked about 48 days, and about 19,000 bushels were produced.

CHEROKEE COUNTY.

There are 27 shafts and 4 slopes in this county, making a total of 31; of these, 5 were not operated last year. Average depth of coal from surface, 58 feet 1 inch; average thickness of vein, 3 feet 5½ inches (this is the lower vein); average number of days worked, 120, or 38 per cent. of the working days of the year; average price paid for mining, 53 cents per ton, or about 2½ cents per bushel for unscreened coal. Number of bushels mined in mines in 1893, 18,957,883; strip banks, 1,237,015; total, 20,194,898, or 28.030 per cent. of the entire output of the state; estimated value of output, \$1,009,744.90. Number of miners employed, 1,570; number of day hands, 567; number of men in strip banks, 170; total, 2,307.

TABLE OF COAL MINES OF CHEROKEE COUNTY FOR 1893.

Office number	OPERATOR.	MINE.	POST OFFICE.	Number of days mine worked in 1893.....	Number of bushels mined in 1893.....	Estimated value of output.....	Average number of miners.....	Average number of day hands	Average number of all employes.....	Av. price pd. per bu. for unscreen'd coal, in cts.	Kind of opening — shaft, drift, or slope...	Has mine two surface openings.....	Depth of slope from surface, in feet.....
1	Geo. Robinson.....	Robinson.....	Columbus.....	190	93,650	\$4,682 50	4	3	7	2½	Shaft.....	Yes.....	20
2	Columbus Coal Company.....	Methodist shaft.....	"	116	687,079	34,353 95	60	19	79	2½	"	"	30
3	Scammon Coal Company.....	No. 1.....	"	10	52,600	2,630 00	35	12	47	2½	"	"	47
5	Peter Graham.....	Enterprise, No. 1.....	Scammon.....	96	276,577	13,828 85	26	11	37	2½	"	"	37
6	Central Coal and Coke Company.....	No. 4.....	"	126	947,074	47,353 70	60	23	83	2½	"	"	54
7	"	No. 5.....	Weir City.....	160	1,477,072	73,553 60	120	36	156	2	"	"	80
8	"	No. 6.....	"	175	2,285,301	111,765 05	125	43	168	2	"	"	90
9	"	No. 7.....	Scammon.....	128	1,591,397	79,569 85	120	33	133	2½	"	"	74
10	"	No. 8.....	Weir City.....	190	1,850,973	92,548 65	160	44	204	2	"	"	55
11	Durkee Coal Company.....	No. 1, Weir City.....	"	54	410,000	20,500 00	110	44	154	2½	"	"	55
12	"	No. 2.....	"	145	174,000	8,700 00	12	4	16	"	Slope.....	"	65
13	"	No. 3, Scammon.....	"	135	586,388	29,319 40	75	32	107	"	"	"	41
14	James Hall.....	Last Chance.....	Scammon.....	200	52,000	2,600 00	4	1	5	2½	Shaft.....	No.....	40
15	Jas. Williamson.....	Sorrow.....	"	85	18,700	935 00	2	1	3	2½	"	Yes.....	96
16	Weir Bros.....	No. 2.....	Weir City.....	170	698,655	34,932 75	58	20	78	2½	"	"	70
17	Hamilton & Braidwood Coal Company.....	No. 1.....	"	120	2,039,255	101,962 75	60	29	89	2	"	"	78
18	"	No. 2.....	"	20	10,100	505 00	10	10	20	2	"	"	"
19	Weir Coal Company.....	Bennett's slope, No. 5.....	"	103	215,928	10,796 40	29	13	48	2½	Slope.....	"	"
20	"	"	"	115	231,389	11,563 45	25	16	41	2½	"	"	30
21	Excelsior Coal Company.....	No. 7.....	"	115	331,405	15,570 25	32	15	47	2½	"	"	80
22	Central Coal Company.....	Daisy.....	"	108	334,200	16,710 00	35	17	52	2½	Shaft.....	"	70
23	K. & T. Coal Company (leased by W. H. Barret).....	No. 18.....	"	155	2,808,725	140,436 25	200	78	278	2½	"	"	42
24	"	No. 23.....	"	89	821,725	41,086 25	100	38	138	2	"	"	30
25	"	No. 47.....	"	123	931,150	46,557 50	85	14	99	2	"	"	40
27	Richard Davis (known as Wood & North).....	Cherokee shaft.....	Cherokee.....	110	82,540	4,127 00	20	4	24	3½	"	"	90
28	J. J. Dodson.....	Swanwick.....	Hallowell.....	112	20,000	1,000 00	3	1	4	2½	Slope.....	"	77
29	Wm. Theobald *.....	Theobald.....	Sherman City.....	"	"	"	"	"	"	"	"	"	"
30	Wm. Hunter *.....	Hunter.....	Star Valley.....	"	"	"	"	"	"	"	"	"	"
31	Fidelity Land and Improvement Company †.....	Turkington shaft.....	Cherokee.....	"	"	"	"	"	"	"	"	"	"
Totals.....				3,123½	18,937,883	\$947,894 15	1,570	567	2,137				
Strip banks.....					1,237,015	61,850 75			170				
Recapitulation.....					20,194,898	\$1,009,744 90			2,307				
Averages.....				120						2½			58½

* Could get no returns; was idle when I visited, in June, 1893.

† Sunk in April, 1893; produced no coal.

TABLE OF COAL MINES OF CHEROKEE COUNTY FOR 1893 — Concluded.

Office number	OPERATOR.	MINE.	POST OFFICE.	Average thickness of vein.		System — room and pillar or long wall.....	By what power operated.....	By what power ventilated.....	How many divisions of air in mine.....	Has mine railroad connections.....	Number of kegs of powder used in 1893..
				Feet	Inches..						
1	Geo. Robinson	Robinson	Columbus.....	3	8	Room and pillar..	Horse.....	Natural.....	1	No.....	187
2	Columbus Coal Company.....	Methodist shaft.....	"	3	6	"	Steam.....	Fan	2	Yes.....	1,390
3	Scammon Coal Company.....	No. 1.....	"	3	4	"	"	Furnace.....	2	"	205
5	Peter Graham.....	Enterprise, No. 1	Scammon	3	8	"	Horse.....	"	2	No.....	692
6	Central Coal and Coke Company.....	No. 4.....	"	3	5	"	Steam.....	Fan	2	Yes.....	1,783
7	"	No. 5.....	Weir City.....	3	3	"	"	"	2	"	3,676
8	"	No. 6.....	"	3	6	"	"	"	4	"	5,210
9	"	No. 7.....	Scammon	3	4	"	"	"	2	"	3,896
10	"	No. 8.....	Weir City.....	3	6	"	"	"	2	"	4,585
11	Durkee Coal Company.....	No. 1, Weir City.....	"	3	8	"	"	"	4	"	806
12	"	No. 2.....	"	3	6	"	"	Furnace.....	2	By tramway.....	350
13	"	No. 3, Scammon.....	"	3	4	"	"	Fan	2	Yes.....	1,213
14	James Hall.....	Last Chance.....	Scammon	3	6	"	Horse.....	Natural.....	1	No.....	100
15	Jas. Williamson.....	Sorrow	"	3	3	"	"	"	1	"	45
16	Weir Bros.....	No. 2.....	Weir City.....	3	3	"	Steam.....	Fan	2	Yes.....	1,746
17	Hamilton & Braidwood Coal Company	No. 1.....	"	3	3	"	"	"	2	"	3,545
18	"	No. 2.....	"	3	4	"	"	"	2	"	95
19	Weir Coal Company.....	Bennett's slope, No. 5.....	"	3	4	"	"	"	2	"	431
20	"	No. 7.....	"	3	5	"	"	"	2	No.....	464
21	Excelsior Coal Company.....	Excelsior, No. 1.....	"	3	5	"	Horse.....	Pot fire.....	2	"	791
22	Central Coal Company.....	Daisy	"	3	5	"	Steam.....	Furnace.....	1	Yes.....	800
23	K. & T. Coal Company (leased by W. H. Barret).....	No. 18.....	"	3	7	"	"	Fan	2	"	5,617
24	"	No. 23.....	"	3	6	"	"	"	4	"	1,643
25	"	No. 47.....	"	3	6	"	"	"	2	"	1,862
27	Richard Davis (known as Wood & North).....	Cherokee shaft.....	Cherokee.....	2	2	"	Horse.....	Grate fire.....	2	"	273
28	J. J. Dodson.....	Swanwick.....	Hallowell.....	2	2	"	"	"	2	"	40
29	Wm. Theobald *.....	Theobald.....	Sherman City.....	0	0	"	"	Natural.....	1	"	
30	Wm. Hunter *.....	Hunter.....	Star Valley.....	2	4	"	Horse.....	"		"	
31	Fidelity Land and Improvement Company †	Turkington shaft.....	Cherokee.....	2	4	"	"	"		"	
	Totals.....										
	Strip banks.....										41,375
	Recapitulation.....										248
	Averages.....			3	5½						41,623

* Could get no returns; was idle when I visited, in June, 1893.

† Sunk in April, 1893; produced no coal.

Record of Inspection.

Geo. Robinson's shaft mine is a horse power, located three miles north of Columbus. Depth of shaft, 20 feet; size, 6 x 10. There are two openings; natural ventilation. "Sometimes, in summer, a grate fire is used." System, single entry; average thickness of coal, 3 feet 8 inches. Miners are paid 24 cents per car, which hold $9\frac{1}{2}$ bushels. Selling price of coal, at mine, \$1.62 $\frac{1}{2}$ screened, and \$1.37 $\frac{1}{2}$ unscreened, per ton. This is a new shaft; commenced operation in 1892; entries are not brushed; coal is pushed to bottom; condition of mine, as to ventilation, very poor. Mr. Robinson promised to hang doors and curtains, and change the course of the air, immediately, as ordered.

The Columbus Coal Company's shaft mine No. 2 is located at Steppville, four miles north of Columbus, on the Joplin division of the Fort Scott & Memphis railroad. Depth of shaft, 30 feet; two openings; ventilation by a furnace, and only one continual course of air through old abandoned workings. Since my first visit, an air shaft has been sunk and a fan erected, which improves the condition of ventilation, as there was next to none, and will continue so, irrespective of all improvements, as long as the man-killing system of single entry is continued. This mine was in a bad condition—stagnant water in entries, and bad air all over mine. Since then the conditions have improved materially.

Scammon Coal Company's shaft mine is located three miles north of Columbus, on a switch of the Fort Scott & Memphis railroad. This mine was formerly known as the Osthoff Bros.' mine. Depth of shaft, 47 feet. There are two openings; ventilation by furnace. When I visited this mine it was in fair condition. In the collection of my statistics, Mr. Clarence Atkinson, superintendent, returned the following report for 1893: Number of bushels mined, 52,600; average number of miners employed, 35; number of days mine worked in 1893, 10 $\frac{1}{2}$. I know the above statement is misleading, as the mine would not have worked one day per month, as his figures show, and would be an average of 1,503 bushels per miner, or a little over 60 tons per miner for the whole year, making his grand and enormous wages for the amount of coal produced, \$31.80. Any man who knows anything about the Cherokee county coal field can readily see this statement is not worthy of publication, which is evidenced by his figures. I intend to treat operators and miners alike; therefore, I returned his statement for correction; will make a report as advised; received no answer. (See table.)

Reuben Esthiss has commenced operations three miles west of Steppville. Coal is about two feet thick. No railroad connection. Did not produce any coal in 1893.

Peter Graham's shaft mine is a horse power, located about 1 $\frac{1}{2}$ miles southwest of Scammonville. Depth of shaft, 37 feet; size, 5x12 feet; ventilation by a furnace; two divisions in air current; system, single entry, not brushed; commenced operation, 1891. Coal is hauled one-half mile in wagons to old

Stilson switch, making it almost impossible to compete with the large coal companies. A good manway is partitioned off main shaft. Measurement of air at intake, on east side, 7,200 cubic feet per minute; at face of mine, east, 2,520 feet per minute. Measurement at intake on west side, 8,200 cubic feet, which went almost direct to the furnace, or upcast, instead of going to the working places. Ventilation on east side was very fair. The coal is of a good quality, and averages 3 feet 8 inches in thickness of vein, which is properly weighed, according to law, then screened, for which the miner receives 5 cents per 100 pounds as a premium. Miners employ a check weighman.

The Keith & Perry, or Central Coal and Coke Company, mine No. 4 is located one-fourth mile west of Scammonville, and connected by switch with the K. C. Ft. S. & M. railroad. Depth of main shaft, 54 feet; air-shaft, 59; size of airshaft, 6x6; ventilation by a fan 14 feet in diameter, with overcast on the south side, and air divided into two currents; worked on the double-entry plan, by room and pillar. Horsebacks are very numerous in this mine, and only two entries are being driven, the sixth east and fourth north; the rest of them have struck horsebacks near the boundaries and stopped. Roof not very good; condition of mine, as a whole, very fair; circulation pretty good.

The Keith & Perry, or, as it is now known, the Central Coal and Coke Company's mine No. 5 is located one mile west of Weir City, on the K. C. Ft. S. & M. railroad. Ventilation by a fan, 14 feet in diameter, and blades four feet wide; air in two divisions; neither over- nor undercast of air; air is very poor and dull, having so far to travel, and having such enormous leakage, on account of stoppings and curtain. As there is no door on the main north, the third west on that side is very poorly ventilated; first and second west, on north side, have been worked to boundaries and abandoned; second, third and fourth west entries, on south side, having no doors, are consequently but poorly ventilated; system of work, partially doubly entry, partially single; back entries are not brushed, and are worked on the zigzag plan, as no sights are put up for men to drive by; hoisting power, an 80-horse-power Joplin horizontal engine. The mine has a Smithvale pump, with four-inch suction and three-inch discharge.

The Keith & Perry, now the Central Coke Company, mine No. 6 is situated one-fourth mile west of Weir City, and connected by switch with the Pittsburg and Weir division of the K. C. Ft. S. & M. railroad. The shaft is 80 feet deep; airshaft, 80 feet deep, 6x8 feet in size, with a fan 14 feet in diameter; air in four sections, having two overcasts. Air is pretty good all over the mine, except in some few instances where break-throughs are not made wide enough between entries. In a good many places breaks in room pillars are not properly bratticed. The boss promised to remedy this, and in future to fill all break-throughs tight when one was broken ahead of it. Double entry-system, with room and pillar; roof, good; fair roadways, and double track on main entry of both sides.

The Keith & Perry, or, as it is now called, the Central Coal and Coke Company, mine No. 7 is located one-half mile north of Scammonville, and connected by switch with the K. C. Ft. S. & M. railroad. Depth of shaft, 90 feet; size, 7x15 feet. There are two openings, and the escapement stairway is partitioned off main shaft. Ventilation is by a fan 14 feet in diameter, with air in two currents. At time of my visit, an overcast was being put in, which will materially assist in ventilation. Capacity of mine, about 600 tons daily. About 120 men are employed. Measurement of air at intake on south side, 7,200 feet per minute; at last cross cut on main south entry, 2,325 feet; at intake on north side, 9,000 feet; but could not get measurement at face, as so many temporary curtains were hung, which allowed of enormous leakage. Measurement of air at upcast, 20,520 feet per minute. About 3,000 feet of this amount went direct from bottom of downcast through the pillars to the upcast, on account of brattice in the break-through where the pump stands not being looked after. The system of working is very good, as double entries are driven, and the main entries are arranged with double track, one for loaded cars and one for empties.

The Keith & Perry, now the Central Coal and Coke Company, mine No. 8 is located 1½ miles southwest of Weir City, on Kansas City, Fort Scott & Memphis railroad. Depth of shaft, 74 feet; size of airshaft, 6x8 feet, having a fan 10 feet in diameter, and blades 3½ feet in width. No overcast. Air is divided into two sections. Shaft is in good condition, and ventilation good all over the mine. Worked on double-entry system. Double track for 50 yards on both north and south main entries.

J. Durkee Coal Company's mine No. 1 is located inside of the city limits, on the Baker addition to Weir City, on a switch of the Kansas City, Fort Scott & Memphis railroad. Depth of shaft, 55 feet; two openings and stairway in airshaft. Ventilation by fan 12 feet in diameter; air current divided into four sections, with overcast on south side; single-entry system. On the occasion of my first visit, this mine was in a deplorable condition, as doors, curtains and break-throughs were neglected. Many improvements have been made since, which failed to perfect the desired object, as the air on third east on north was very dull at my last visit, and a sulphuric odor came from the abandoned workings, necessitating the miner to labor in obnoxious air. The superintendent contemplated the changing of the air course, which would be of great advantage, in case the area of the upcast is enlarged, which should be at least 80 feet, instead of 18 feet. This he promised to do.

J. H. Durkee slope No. 2 is located northeast of Weir City smelter. It was leased, when first I visited, by Phil. McCarroll and John Welsh, of Scammonville. The mine was in a bad condition, although improvements were made by Carroll & Welsh, which were of a short duration, as they discontinued their operation. Durkin & Keaton afterwards leased and operated for a short time; they, also, relinquishing in despair, as the coal is

hauled a distance of three-fourths of a mile to a switch of the St. Louis & San Francisco railway, near the smelter, adding additional cost to the royalty and price of mining. Thus the mine is being butchered, and the ordinary precautions evaded or overlooked, in ventilation, drainage, and system. Mr. Hooper, an old-time miner, leases and operates this mine at present, believing he stands high in the grace of the company, with a determination to rank as an independent operator in the future.

Durkee's mine No. 3, Scammon, formerly known as Norton's No. 2, or the Katydid, is located one-half mile northwest of Scammonville. Depth of shaft, 65 feet. There are two openings; ventilation by a fan 12 feet in diameter; air divided into two sections; system, double entry. An escape-ment, or traveling way, has been sunk near the face of main (south) entry. This mine was in a very fair condition. Mr. Zimmerman, the foreman, labors unceasingly to have the air conducted through the proper channel, if only supplied with the requisite material by his superior officer. As a whole, the mine was in a healthy state when I inspected it.

The James Hall shaft mine is located two miles northeast of Scammonville. It is horse-power mine, with no railroad connections, but does some shipping, by hauling to the switch at the Central Coal and Coke Company's mine No. 8. Shaft is 41 feet deep, and 6x12 feet in size; system, single entry, room and pillar; only one opening, and natural ventilation in winter, but grate fire in summer; average thickness of coal, 3 feet 8 inches; mine began operation in 1891.

One mile northeast of Scammonville is the Williamson shaft mine, a horse-power mine, with no railway connection, and depending on local trade. Depth, 40 feet; average thickness of coal, 3 feet 8 inches. I visited this mine three times, but found it idle at each visit; hence could not get down, as there is but one opening. This mine has been idle most of the time since Mr. Williamson, senior, was killed by a fall of slate. (See "Fatal Accidents.")

Weir Bros.' shaft mine No. 2 is located about three-fourths of a mile west of Weir City limits, on a switch of the St. Louis & San Francisco railway. Depth of shaft, 96 feet; two openings; ventilation by fan; air divided into two currents; system, single entry; condition of mine, when I inspected it, was not very commendable; in fact, the air of this mine was left to take care of itself. Rooms were worked on the gouge system; neither doors nor curtains adjusted to be of any service, and break-throughs or crosscuts left open. I called Mr. Weir's attention to the same, and a fan 12 feet in diameter has been erected, and improvements made in the conducting of air to the working faces, which is inadequate as long as the system of single entry is continued.

Hamilton & Braidwood's shaft mine No. 1 is located one-half mile northwest of Weir City, on a switch of the Kansas City, Fort Scott & Memphis railroad. Depth of shaft, 70 feet; size, 7x13 feet; two openings; ventila-

tion by a fan 12 feet in diameter; divisions of air, two; system, partial double entry. Air was very dull in third east and third west entries on north side, requiring doors, which were provided. On south side, mine was fairly ventilated. In Mr. Hamilton's statistical report for 1893, he reports 60 men as working 120 days, and producing 2,039,255 bushels of coal, using 3,545 kegs of powder. (See table.) By this statement, each miner produced $283\frac{1}{4}$ bushels per day, and averaged 575 bushels to the keg of powder. This statement is, to say the least, misleading. By it a miner is shown to load about $11\frac{1}{2}$ tons every day the mine worked. This, perhaps, he might do, but he would need to work every day the mine was idle, that his coal should be all loose and ready to load when the mine worked. Furthermore, the average of bushels to the keg of powder is far in advance of the majority of miners. By a little study of the tables of Cherokee county, you can see that even this failed to raise the average wages of Cherokee county to a fair standard. I have found many reports coming to this office having the same object in view. Some of them have been returned to the operator for correction, others I produce. .

Hamilton & Braidwood Coal Company's mine No. 2 is located one mile northwest of the business center of Weir City, on the Kansas City, Fort Scott & Memphis railroad. Size of shaft, $7\frac{1}{2} \times 16$ feet, and depth, 78 feet; thickness of vein, 3 feet 4 inches. There are two openings. The air-shaft is $6\frac{1}{2}$ feet square. By the time this appears, there will be a 15-foot fan in operation. This is a new mine—just opened in November, 1893; it will be worked by double entry. Miners are paid 50 cents per ton, mine run; roof good, but north side inclined to be wavy. This is one of the finest plants in the county, and everything is in first-class order, and well equipped.

The Weir Coal Company's slope, known as Bennett's No. 5, is located on a switch of the Kansas City, Fort Scott & Memphis railroad, adjacent to Weir City limits on the southwest. An endless rope, operated by steam power, is used in the hauling or hoisting of coal to the top. Distance from surface to bottom of slope, 180 feet. There are two openings, and the mine is ventilated by a fan eight feet in diameter. System, single entry, which has evidenced of being a failure in ventilating the various working places in this as well as all other mines in the district. It was almost impossible to work in first west and first north entries, particularly in rooms turned off same. I requested the mine boss to stop some of those places, and conduct the air to the face. This was immediately complied with, and he promised to make the necessary changes all over the mine.

Weir Coal Company's mine, known as Bennett's slope No. 7, is located southeast of Weir City. Coal is hoisted by a tail rope, and hauled in wagons a distance of 600 yards to the Kansas City, Fort Scott & Memphis railroad switch; system, single entry; first and second easts, on north, requiring doors. The old, ancient system of ventilation is practiced in this

mine. A rudely-constructed piece of boiler iron is made in the shape of a pot, about 20 inches in diameter, and suspended at the bottom of the air-shaft. Mr. Bennett promised to change the same to a furnace. I ordered manholes cut in side of slope, as there was no regular traveling way. Miners inform me occasionally of the conditions and changes, and I understand considerable improvement has been made in ventilation, which was requisite.

The Excelsior Coal Company's shaft mine is a horse power, located one-fourth of a mile southeast of Weir City. Depth of shaft, 30 feet. There are two openings. A traveling way is partitioned off main shaft. Ventilation by a furnace; no divisions in air current. On the occasion of my first visit to this mine, many of the working places were in a very unhealthful condition, and not in a fit state to work in, for want of air. This mine is worked on the coöperative system, and the majority of the stockholders are practical miners, who would be very loud in their denunciation of any individual or corporation who would request of them to work in places so devoid of the most essential element of nature, viz., air.

The Central Coal Company's mine "Daisy" is situated $1\frac{1}{2}$ miles north of Weir City, on the Kansas City, Fort Scott & Memphis railroad. Mine is 80 feet deep; operated by steam power. Size of shaft, 6x12 feet. There are two openings, one of which is fitted with an escapement ladder. The mine has a capacity of about 400 tons per day; is worked by single entry, on the room-and-pillar plan; coal is about 3 feet 6 inches thick. Began operations in 1886. Ventilation by two fans, each 9 feet in diameter, with the air in two currents, fitted with overcasts on east side. The number of men employed varies with the seasons, averaging 35. Measurement of air at intake on east side, 12,810 feet per minute; at face of main, east, 585 feet. Condition of east side, as a whole, very fair. The west side of this mine is worked out and abandoned.

The Kansas & Texas Coal Company's mine No. 18 is now leased and operated by W. H. Barret, an ex-superintendent of the Kansas & Texas Coal Company. This mine lies $1\frac{1}{2}$ miles north of Weir City, and is connected by switches with two railroads, the St. Louis & San Francisco and the Kansas City, Fort Scott & Memphis. Depth of shaft, 70 feet; size, 8x12 feet. A stairway is partitioned off the main shaft. There is also a ladder in the airshaft. Capacity of mine, about 1,000 tons daily. It has been in operation since 1887, and employs about 200 miners. It has a fan 20 feet in diameter, to furnish ventilation, and is supposed to have four divisions in air, with overcast on south side. Measurement of air at intake on north side, 23,860 cubic feet per minute; at face of main entry on north side, could get no register, as the air there is left to take care of itself, neither doors nor curtains being adjusted to cause the air to circulate at the face of the workings. Measurement of air at intake on south side, 20,400 cubic feet per minute, or a total of 44,260 cubic feet per minute going into

the mine. At the face of the main south entry the air was very dull, and would scarcely register. Many of the cross entries in this mine are without doors or curtains, and break-throughs are left standing open, particularly between rooms. It is almost impossible to ventilate a mine with such a large area as No. 18 when operated on the single-entry system. Since my first visit, considerable improvement has been made in several of the entries as to ventilation, and a man is continually looking after the filling of break-throughs and the general supervision of ventilation, which has materially increased in volume at the face of workings. One fact which cannot be overlooked is the credit due Mr. Barret for his humane practice of hiring some of our best miners who could not find employment elsewhere since the late unpleasantness or suspension in this district, as they were given an object lesson in the following Christian-like manner: If a miner applied for work, he was told that it was necessary for him to produce a letter of recommendation from his late boss or superintendent; failing in this, he could not get work. Mr. Barret was the only operator in the district who refused to be bound by this practice. He denounced it as inhuman, hiring whoever presented himself, and questioned no man's right to think, speak and act for himself. His independent action has provoked much criticism, by which he incurred the enmity of many of the operators of this district. One inducement the miners have is the knowledge of their coal being properly weighed, and the superior working qualities of the vein, as it is about 3 feet 8 inches thick, shoots freely, and is correctly weighed in a hopper before being screened. Mr. Barret paid 65 cents per ton for unscreened coal, while the Kansas & Texas Company, from which he leased, paid only 50 cents per ton. He has sunk a new airshaft at the face of the main north entry, and ventilation on the north side has been considerably improved. A new fan house has been erected, costing about \$300, and a new boiler put in, as an improvement to the hoisting plant.

The Kansas & Texas Coal Company's mine No. 23 is situated about two miles north of Weir City, and connected by switch with the St. Louis & San Francisco railway. Shaft is 42 feet deep; size, $8\frac{1}{2} \times 15\frac{1}{2}$ feet; has three openings and two stairways, one in main shaft and one in airshaft; ventilation by a 12-foot fan; coal is about 3 feet 6 inches thick; worked on the single-entry system, and room and pillar; capacity, about 600 tons daily; roof, on west side, bad. There are 11 cross entries on each side, but no doors, having, instead, temporary curtains hung up here and there, for directing the air current. The single-entry system should be abolished. There are places in this mine where the air is so bad that it is not fit for any man to live in; water courses and air courses are almost closed up—in fact, it looks as though the air had been expected to take care of itself. Mr. Thompson, the pit boss, is a capable man, but the mine was butchered up before he took charge of it. He has made a great many improvements since he took hold of the mine. Who is to blame for this state of affairs in

so many mines? It is, generally, the superintendent. Although the pit boss has direct charge of the mine, yet he has to obey the dictates of the superintendent, who, in many instances, does not know much about the mines. The miner has, therefore, to suffer for want of air. A long step in the way of rectifying this error lies in the abolition of the single-entry system. One hundred men are employed at this mine, at 50 cents per ton, mine run. The coal is weighed in a hopper, on top; self-dumping cages are used.

The Kansas & Texas Coal Company's shaft mine No. 47* is located two miles northwest of Weir City, on a switch of the St. Louis & San Francisco railway. Depth of shaft, 30 feet; size, 6x16 feet. This mine commenced operation in February, 1893; has two surface openings; is ventilated by a fan 10 feet in diameter. There are two sections of air in the mine. System of operation, single entry and room and pillar. Condition of mine at my last inspection, fair. Shots were fired twice a day, and I called the superintendent's attention to the shot-firing law, after which the practice was discontinued.

The Kansas & Texas shaft mine No. 49 is located inside the limits of Weir City. This shaft has just been sunk to the coal, and is not yet in operation.

Richard Davis shaft mine is a horse power, located on a switch of the Kansas City, Fort Scott & Memphis railway, one mile south of Cherokee depot. Depth of shaft to top vein, 40 feet. Coal vein is about 26 inches in thickness; worked on the single-entry and room-and-pillar system. This mine has three surface openings; stairway in airshaft. On the occasion of my visit to this mine, I found it in a very fair condition. Miners are paid 87½ cents per ton for unscreened coal. Richard Davis, the mine boss, leases and operates this mine from the company that formerly operated the bottom or lower vein, which was abandoned over two years ago.

J. J. Dotson's mine, located near Hallowell, works a few men in winter. I did not examine this mine, it not being in operation when I visited it.

Wm. Theobald's mine, 10 miles west of Scammon, was not in operation. I could not inspect it; have received no return for 1893. See table.

Wm. Hunter's mine was not in operation when on my rounds of inspection; could not get returns for 1893.

W. E. Turkington's shaft mine, five miles southeast of Cherokee, did not produce any coal in 1893; was sunk on the prospect plan.

Analysis of the Earnings of the Cherokee County Mines for 1893.

This county ranks second in production of coal among the counties of the state, and, with its neighboring county, Crawford, produces about two-thirds of the output of the state, Cherokee producing 28.03 per cent. The coal-mining industry ranks second only to that of farming in our state, and such

*This mine has been leased by W. H. Barret since the beginning of March, 1894.

being the case, in my judgment it should be carefully considered, especially in its sanitary and compensative relations to those who obtain their livelihood by making of it a vocation. Following the line of my duty, I have aimed to make as accurate a report as possible, and to so tabulate it that the interests of the great body of men who earn their bread in this industry be given the prominence they deserve; consequently, I call your attention to the following:

By a reference to section 28 of the statutes governing mines and mining, the duties of the Inspector of Mines are seen to be expressly set forth. It is stipulated that "The Inspector's record and all matters concerning the coal-mining business of public interest shall be embodied in the Inspector's annual report." Hence, I would call your attention to the following:

By reference to the foregoing tables, you will find a summary of the men employed, number of days they worked, amount of coal they mined, and its estimated value; also, the number of day hands employed, and prices paid the miners by different companies; but I found it impossible to collect data by which to schedule the wages of day hands.

This table also shows the kind of openings to the mine, whether shaft, drift, or slope, and whether mine has two openings; the depth of coal from surface; kind of coal; its thickness; the system of working; by what power operated and ventilated; describes divisions of air in mine; shows whether mine is connected with railroad or not; and gives the amount of powder used at each mine in 1893, as shown by reports furnished me by operators.

Believing that the welfare of a class of men as numerous as the miners of Kansas is a matter of public interest, I would invite your careful examination of the analysis which follows: In this county are 1,570 miners, and it is safe to suppose that, of these, enough are the heads of families to make, at least, 6,000 people dependent on their earnings. The total number of days worked by the miners of this county, in 1893, was 3,123 days, or an average of 120 days per mine. During this period, 18,957,883 bushels were mined, exclusive of strip banks.

As the total number of miners was 1,560, this output would average 12,075 bushels per miner, or 483 tons. As it is claimed by the operators that 50 cents in summer and 56 in winter for unscreened coal is equivalent to the old ratio of $3\frac{1}{2}$ and 4 cents for screened coal, the price now established is an average of 53 cents the year around. There are many variations from this direct basis. Four hundred and eighty-three tons at 53 cents give a yearly earning of \$255.99. Now, to this sum we will add one-fifth of the yearly earnings to pay for the "piece work" done by the miner, and for which no regular day hands are employed, such as entry driving, room turning, cutting through slips, rolls, horsebacks, etc. (This is equivalent to $10\frac{3}{4}$ cents for every ton mined in the county, and is acknowledged to be far in excess of the actual cost.) By adding this one-fifth, \$51.19, the miner has a gross earning of \$307.18. By stopping at this point, the miner is

shown as drawing over \$25 for every month in the year. In all works published on coal mining which I have seen, the analysis has gone no further. But let us see how much of this earning was actual *mine expense*. We find, by the table, 41,375 kegs of powder were burned by the Cherokee miners, or $26\frac{1}{2}$ kegs per miner. This powder costs the miner \$2 per keg. Consequently, for powder, his expense is \$52.66. We find that each mine averaged 120 days in the year, or 4 months and 16 days, at 26 days to the month. But as the miners did not work every day in succession, but were scattered through the year, every miner in the county was in the mine at least one-half more time than is credited to the mine. It is the common custom of miners to go into their places on days when the mine is not hoisting and prepare as much loose coal as possible, in readiness for days of hoisting. Thus, the miner actually worked 180 days instead of 120. A gallon of lard oil will last a miner, for lighting purposes, on an average, 25 days, and costs him 80 cents a gallon. As he has worked 180 days, he has used $7\frac{1}{3}$ gallons of oil, costing him \$5.76.

The miner is charged by the month for blacksmithing. If the mine works more than half time, \$1; if less, 50 cents. As he worked over $4\frac{1}{2}$ months last year, his bill would be at least \$5. The company furnishes the shot forces with squibs to fire shots in the mine, but each miner is charged 25 cents a month to pay for the proportion his shots are supposed to require. For five months, his bill for squibs is \$1.25. Another item of expense is the waterproof paper and soap required to make cartridges. This bill would reach at least \$5. A miner has a good many tools to buy and keep in repair, such as a drilling machine, shovels, picks, a sledge, wedges, and oil and powder cans. Picks will require new steel points about once a year, and handles oftener. The dampness of the mine soon rusts out a powder or oil can, and it will require at least \$4.50 to keep these tools in repair. These are genuine and legitimate expenses, unavoidable on the part of the miner, and must be met at every mine in this district. I have endeavored to keep on the conservative side in this estimate, that no one might have an opportunity of successfully criticising it. It has been the custom to speak of the miner as receiving the largest of wages; let us compute, then, his necessary expenses, that we may arrive at a just estimate of the munificent remuneration the miner is said to receive. Here is the result:

Earnings.....	\$307 18
Expenses:	
Powder	\$52 66
Lard oil, for lamp.....	5 76
Blacksmithing	5 00
Squibs.....	1 25
Soap and paper.....	5 00
Repair of mining tools.....	4 50
Total.....	74 17
Balance, representing net earnings.....	<u>\$233 01</u>

This is an average daily pay of \$1.94 $\frac{1}{2}$ for each day the mine worked; but it should be borne in mind that every day the mine worked represents, at the very least, 1 $\frac{1}{2}$ days for the miner. Indeed, it is the rule in Cherokee and Crawford counties that when the mine hoists half time the miner has worked full time. Our most expert miners have been often heard to say that if a mine hoisted alternate days the miner could on the idle days lay his track, timber his place, and prepare coal for the next day, thus being employed every day. This earning of \$233.01 gives a daily wage, for the 312 working days in the year, of 74 $\frac{3}{4}$ cents; for the 365 days of the year, 63 $\frac{1}{2}$ cents. It is safe to say, that of the miners of Cherokee county fully one-half are tenants, who pay, on an average, \$5.10 per month in rent, or about 17 cents a day. As this rent must be paid for every day, we find, by deducting the rent from 63 $\frac{1}{2}$ cents, that the tenant miner of the county has the enormous sum of 46 $\frac{1}{2}$ cents for every day in the year, with which to feed, clothe and educate his family and himself, to pay the necessary medical attendance, furnish his home, etc.

Of the miners who are not tenants, at least half are making monthly payments, or trying to, on homes to which as yet they have no legal title. Estimating 6,000 people dependent on the earnings of the 1,570 miners in the county, we have an average of four to the family, who must live very economically to subsist on the sum of 46 $\frac{1}{2}$ cents. Allowing a family of four persons 30 cents per day, or 2 $\frac{1}{2}$ cents each per meal, to buy food, there still remains a little over 16 cents with which to buy school books, clothing, boots and shoes, and all the necessities, not the comforts, of home, such as bedding and furniture, fuel, lights, soap, etc., and pay for medical attendance, also; and in the dry seasons of the year the miners are often obliged to pay for water, which is sometimes obtained from excavations of strip mines. The people who are not conversant with the avocation and situation in life of the average coal miner can form no conception. The foregoing analysis is an accurate statement, and the basis thereof is taken from the operators' figures as forwarded to this office for the year 1893.

TABLE SHOWING EARNINGS OF MINER IN CHEROKEE COUNTY FOR 1893.

Average number of days mine worked.....	120
Average number of bushels produced per miner in the county.....	12,075
Average price paid per bushel for unscreened coal.....	\$0 02 $\frac{1}{2}$
Average price paid per ton for unscreened coal.....	53 $\frac{1}{2}$
Average earnings per miner for the amount of coal produced.....	255 99
Adding one-fifth of miner's earnings for yardage, room turning, and cutting faults.....	51 19
Miner's total earnings.....	\$307 18

MINER'S EXPENSES FOR TIME WORKED IN 1893.

Powder.....	\$52 66
Lard oil.....	5 76
Blacksmithing.....	5 00
Squibs.....	1 25
Soap and paper.....	5 00
Repair of mining tools.....	4 50
Total expense.....	74 17

Balance, or net earnings due the miner.....	\$233 01
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Average daily earnings for the 120 days mine worked.....	\$1 94½
Average daily earnings for the 312 working days of the year.....	74½
Average daily earnings for the 365 days of the year.....	63½
Average daily rent to miner in Cherokee county, 17 cents, leaves.....	46½
Calculating four persons to each family, at a cost of 2½ cents each per meal, or 7½ per diem, is 30 cents, leaving.....	16½

CLOUD COUNTY.

In this county, but four shafts were in operation (see table) on the occasion of my first visit to these mines. But two of them had second openings, and of ventilation there was next to none. There was no place to land the cages on top, and the gin horse held the cage while the car was being pulled off; none had gates at the landings, nor were any of the ordinary precautions taken for the safety of the men.

Since my visit, many improvements have been made, but there is some dissatisfaction yet as to ventilation. Most of the coal is sold at the mines, and a portion of it is hauled to Concordia.

The coal is an inferior quality of lignite, averaging 17½ inches in thickness, worked on the long-wall system. The miners are paid \$1.60 per ton, or 6½ cents per bushel. Selling price at the mine, \$2.50 in summer and \$3 in winter. In 1893, the mines of this county produced 89,695 bushels, or .124 per cent. of the state's total output, the estimated value amounting to \$9,866.45. The average number employed is about 46. Of this number, 37 are miners, who worked an average of 181 days, or 58 per cent. of the working days in 1893. A good many mines have been abandoned in this county in the last few years, as follows: Walter Richardson, 1891; Causlin, 1891; Thos. Hoys, 1892; Jas. Murry, 1891; Theodore Long, 1891; Curtis, July, 1893. No powder is used in these workings, with the exception of a very little giant powder employed in bushing. Entries are less than three feet high in some instances. Miners push their coal to the bottom, and cage it. However, they have been very fortunate in 1893, having no accident.

TABLE OF CLOUD COUNTY.

ITEM.	Alexander Henderson, mine No. 1, Minersville.....	Alexander Henderson, Jr., mine No. 2, Minersville.....	Wm. Neitzel, Poplarville, Minersville.....	Gilbert Barker, Barker mine, Minersville.....	Total.....
Number of days mine worked in 1893.....	182	156	257	129	724
Number of bushels mined in 1893.....	20,000	15,000	42,195	12,500	89,695
Estimated value of output.....	\$2,200 00	\$1,650 00	\$4,641 45	\$1,375 00	\$9,866 45
Average number of miners.....	13	10	6	8	37
Average number of day hands.....	2	2	1	1	6
Average number of all employes.....	15	12	7	9	43
Average price paid for mining, per bushel.....	6½	6½	6½	6½	.....
Kind of opening—shaft, drift, or slope.....	Shaft.	Shaft.	Shaft.	Shaft.	.....
Has mine two separate surface openings?.....	Yes.	Yes.	Yes.	Yes.	.....
Depth of shaft from surface.....	60	60	61	35	.....
Kind of coal.....	Lignite.	Lignite.	Lignite.	Lignite.	.....
Thickness of vein, in inches.....	18	18	18	17	.....
System.....	Long wall.	Long wall.	Long wall.	Long wall.	.....
By what power operated?.....	Horse.	Horse.	Horse.	Horse.	.....
By what power ventilated?.....	Natural.	Natural.	Grate fire.	Natural.	.....
How many divisions of air in mine?.....	1	1	2	1	.....
Has mine railroad connections?.....	No.	No.	No.	No.	.....

In Cloud county most of the miners work on farms in summer and mine coal in winter. Average earnings per miner for the year 1893, \$266.64, or \$22.22 per month.

Record of Inspection.

Alex. Henderson's shaft mine is a horse power, located in Minersville. Depth of shaft, 60 feet; size, 6x4, or 4x4, as two feet of main shaft was partitioned off, to serve as an airshaft or upcast, also forming a so-called escapement; system, long wall; thickness of vein, 18 inches; price paid for mining, \$1.60 per ton; selling price at mine, \$2.50 in summer and \$3.00 in winter. This mine commenced operations in September, 1892. When I visited this mine it was not in a condition for any man to work in, not having a second opening, and no method of ventilation; had no railing or gate on pit top; hoisting cable was an old hemp rope, almost broken in many places; however, a new hoisting rope was put on before I left, gates put on top of shaft, and an airshaft has been sunk since my first visit.

Alexander Henderson, No. 2, is a horse power, and is located at Minersville. This mine has two separate openings. Depth of shaft, 60 feet; size, 4x4; system, long wall; natural ventilation. Gin, or horse power, in bad condition. No knees or resting place for cage when cars were to be pulled off or put on cage, and depended on the old horse to hold it still.

This mine was idle during the summer. When I visited Minersville they were getting the water out. Mr. Henderson promised to make several necessary changes, which no doubt he has done. He claimed he did not know there was any law relating to mines on the statutes. Meanwhile, he operates two mines, and receives 25 cents per ton royalty for all coal mined in the shaft mine operated by Wm. Neitzel.

Wm. Neitzel's shaft mine is a horse power, located at Minersville. Depth of shaft, 61 feet; size, 4x8. This mine has a second opening, or airshaft, and is ventilated by a furnace. System, long wall; thickness of vein, 18 inches. This shaft comes nearer complying with the law than any of the shaft mines around Minersville; still it is very defective in many respects. The air was very dull and roads were wet. Mr. Neitzel pays 25 cents per ton royalty. Mining price, \$1.60 per ton; selling price at mine, \$2.50 in summer and \$3.00 in winter. Considering all the disadvantages, this mine produced considerable coal, most of which was sold at the mine.

G. Barker's shaft mine is a horse power, located in the immediate vicinity of Minersville. Depth of shaft, 35 feet; size, 4x6, two feet of which was partitioned off for an airshaft, not having a second opening. A rudely constructed ladder was nailed in the part partitioned off the main shaft, to serve as an escapement. Thickness of coal vein, 16 to 18 inches; system, long wall; natural ventilation. A hemp rope was used for hoisting, which was replaced by a new one, as it was unsafe, being almost broken in two places. I ordered an airshaft sunk immediately, and connection made,

which was perfected almost in the required time. Mr. Barker pays Jas. Murrey 25 cents per ton royalty.

COFFEY COUNTY.

In this county, a 14-inch vein of bituminous coal is mined, only a very small portion of which is shipped. Most of the coal is sold around the local district. There is but one small drift in the county that I know of. This is operated by R. J. Soper, of Lebo. The balance of the coal is produced from strip banks. Those who operate near Lebo are W. M. Phinney, Lloyd Reece, L. O. Lyons, W. M. Buckle, D. Dowell, Bostalla & Son, Rice & Connors. I could hear of many others who produce some coal on their farms, in a small quantity, but could get no returns from them. Estimated output for the county in 1893 is 375,000 bushels, or .52 per cent. of output of state. Estimated value of output, \$32,812.50. Number of employés, 95. Depth of coal from surface in strip banks runs from 8 to 15 feet.

CRAWFORD COUNTY.

Number of mines, 45; number of days worked, 4,939; average number of days worked at each mine, $114\frac{1}{3}$; per cent. of working days at each mine, 36.78; amount of coal produced, 28,907,375 bushels; the strip banks of the county produced 5,524,252 bushels; total, 34,431,627 bushels, or 47.79 per cent. of the total output of the state; estimated value, \$1,721,581.35; number of miners employed, 2,558; number of day hands employed in mines, 732; number of day hands employed in strip banks, 375; total number of employés, 3,365. The average price paid for mining is $2\frac{1}{2}$ cents per bushel for unscreened coal. Of the 45 mines, 34 are shafts, 9 are drifts, and 2 are slopes. Of these mines, 42 have two surface openings, and 3 with one surface opening. The average depth of the shafts is 57 feet and $10\frac{1}{4}$ inches. The average thickness of coal is 3 feet $2\frac{3}{4}$ inches.

The power by which these mines are operated is as follows: Steam, 22; horse power, 12; drift mines, at which men push the coal to the surface, 8. Three of the mines represented on the table have been abandoned.

Of the 45 mines, 21 are ventilated by fans, 2 by furnaces, 5 by grate fires, and 14 by natural currents; 15 mines have but one current of air; 19 have two divisions of air, and 8 have four divisions of air; 32 mines have direct railroad connection.

Number of kegs of powder used in mines, 65,291; in strip banks, 696; total, 65,987.

TABLE OF COAL MINES OF CRAWFORD COUNTY FOR 1893.

Office number.....	OPERATOR.	MINE.	POST OFFICE.	Number of days mine worked.....	Number of bushels mined.....	Estimated value of output.....	Average number of miners.....	Average number of day hands.....	Average number of all employes.....	Av. price pd. per bu. for unscreen'd coal, in cts.	Kind of opening — shaft, drift, or slope..	Has mine two surface openings?.....	Depth of shaft from surface, in feet.....
1	Arthur Bell.....	Bell's Bluff.....	Coalvale.....	196	155,750	\$7,787 50	18	7	25	2½	Drift.....	Yes.....	45
2	Franklin Coal Co.....	No. 1.....	Pittsburg.....	104	146,500	7,325 00	20	5	25	2¼	Shaft.....	“	39
3	“	No. 2.....	“	190	860,675	43,633 75	78	18	96	2¼	“	“	61
4	Kansas Shaft Coal and Mining Company.....	No. 1, Cornell.....	Midway.....	129	1,093,000	54,650 00	125	29	154	2¼	“	“	97
5	Western Coal and Mining Company.....	No. 2, Fleming.....	Fleming.....	169	1,833,875	91,933 75	150	29	179	2¼	“	“	108
6	“	No. 3.....	“	164	1,581,315	73,215 75	120	31	151	2	“	“	72
7	“	No. 4, Yale.....	Yale.....	173	790,436	39,321 80	63	26	89	2	“	“	85
8	“	No. 5.....	“	70	145,932	7,296 60	38	13	51	2¼	“	“	100
9	“	No. 6.....	“	192	5,843,827	292,191 35	336	92	428	2¼	“	“	116
10	Cherokee & Pittsburg Coal and Mining Co.....	No. 1, Frontenac.....	Frontenac.....	80	916,701	45,835 65	160	47	207	2¼	“	“	57
11	“	No. 2.....	“	167	2,584,773	129,238 65	200	72	272	2¼	“	No.....	101
12	“	Swan.....	“	120	77,100	3,855 00	14	6	20	2	“	Yes.....	65
13	Pittsburg Gas Coal Company.....	No. 2, Midway.....	Pittsburg.....	42	157,389	7,869 45	32	16	48	2	“	“	30
14	“	No. 4.....	Midway.....	170	1,716,572	85,828 60	110	20	130	2¼	“	“	35
15	Pittsburg & Midway Coal Co.....	No. 2, Kirkwood.....	Pittsburg.....	207	2,042,956	102,147 80	141	36	177	2	“	“	35
16	Wear Coal Company.....	No. 3.....	“	36	184,106	9,905 30	85	21	106	2	“	“	35
17	Minard & Co.....	No. 1.....	“	144	435,155	21,757 75	65	15	80	2¼	“	“	35
18	Utley & Donell.....	Forerty drift.....	“	105	38,000	1,900 00	5	1	6	2¼	Drift.....	“	57
19	K. & T. Coal Company.....	No. 17.....	St. Louis.....	80	670,800	33,540 00	78	17	95	2	“	“	65
20	“	No. 20, Pittsburg.....	“	120	1,020,350	51,017 50	80	23	103	2	“	“	65
21	“	No. 22, Litchfield.....	“	161	1,954,425	97,721 25	145	27	172	2	“	“	60
22	“	No. 25.....	“	42	231,625	11,581 25	56	21	77	2	“	“	50
23	“	No. 28.....	“	142	1,738,675	87,933 75	130	17	147	2	“	“	35
24	Arnot & Lanyon.....	No. 37, Litchfield.....	Pittsburg.....	180	903,154	45,157 70	75	25	100	2¼	“	“	35
25	Hamilton & Grant.....	Arnot & Lanyon.....	Weir City.....	65	40,000	2,000 00	15	9	24	2¼	Drift.....	“	32
26	James Keller.....	Hamilton's No. 3.....	Pittsburg.....	63	2,000	2,000 00	4	1	5	2¼	Shaft.....	“	50
27	Dusey & Walker.....	Keller.....	“	130	40,000	2,000 00	16	9	25	2¼	Drift.....	No.....	50
28	T. Root Coal Co.....	Hope.....	“	91	100,000	5,000 00	3	1	4	2¼	Shaft.....	Yes.....	30
29	Hooper.....	Root.....	“	107	21,075	1,203 75	64	19	83	2	Drift.....	“	40
30	S. Cartwright.....	Hooper.....	McNune.....	140	591,179	29,558 95	2	2	11	2	Drift.....	“	83
31	Durkee Coal Company.....	Hurry.....	Weir City.....	82	10,034	511 70	7	4	11	2	Drift.....	“	40
32	Chokursh & Richie.....	Ridgely drift.....	Pittsburg.....	54	32,233	600 00	5	1	6	2	Drift.....	“	83
33	Little Four Coal Company.....	Independence.....	“	40	12,000	600 00	25	16	21	2	Drift.....	“	83
34	Capt. W. C. Beck.....	Beck drift.....	“	75	8,000	400 00	5	16	21	2	Drift.....	“	83
35	Fuller Coal Company.....	Fuller, No. 1.....	“	35	11,688	584 40	5	16	21	2	Drift.....	“	83
36	Central Coal and Coke Company.....	Yale, No. 9.....	Weir City.....	60	6,725	336 25	5	2	7	2¼	Drift.....	“	83
37	King & Capron.....	King.....	Arcadia.....	60	6,725	336 25	5	2	7	2¼	Drift.....	“	83

TABLE OF COAL MINES OF CRAWFORD COUNTY FOR 1893.—CONTINUED.

Office number.....	OPERATOR.	MINE.	POST OFFICE.	Number of days mine worked.....	Number of bushels mined.....	Estimated value of output.....	Average number of miners.....	Average number of day hands.....	Average number of all employes.....	Av. price pd. per bu. for unscreen'd coal, in cts.	Kind of opening — shaft, drift, or slope...	Has mine two surface openings?.....	Depth of shaft from surface, in feet.....
39	W. J. Lanyon Coal Company.....	Lanyon drift.....	Pittsburg	290	435,000	\$21,750 00	15	8	23	2 $\frac{1}{2}$	Slope...	Yes...	28
40	J. C. Santifer.....	Bevin shaft.....	"	84	75,000	3,750 00	14	3	17	2 $\frac{1}{2}$	Shaft...	"	33
41	E. C. Sheldon.....	Sheldon, No. 1.....	"	70	54,350	2,717 50	12	6	18	2 $\frac{1}{2}$	"	No...	33
42	Black Diamond Coal Company.....	Diamond.....	"	220	123,000	6,150 00	14	5	19	2 $\frac{1}{2}$	"	Yes...	25
43	Geo. Watkins.....	Watkins drift.....	"	50	15,000	750 00	4	1	5	2	Drift...	"	24
44	Robt. Nesh.....	Nesh.....	"	30	81,000	4,050 00	12	3	15	2 $\frac{1}{2}$	Shaft...	"	24
45	T. M. Barret.....	Barret.....	Weir City.....	100	100,000	5,000 00	10	4	14	2 $\frac{1}{2}$	Slope...	"	24
	Totals.....			4,939	28,907,375	\$1,445,368 75	2,558	732	3,290				
	Strip banks.....			5,524,252	276,212 60				375				
	Recapitulation.....				34,431,627	\$1,721,581 35			3,665				
	Averages.....			114 $\frac{1}{2}$						2 $\frac{1}{2}$			57-10 $\frac{1}{2}$

¹ Days and output included in mine No. 1.² Abandoned March 1, 1893.³ Formerly known as Minard's.⁴ Abandoned in May, 1893.⁵ Abandoned in March, 1893.⁶ Known as Schwab's mine.⁷ Day work.

TABLE OF COAL MINES OF CRAWFORD COUNTY FOR 1893.—CONTINUED.

Office number	OPERATOR.	MINE.	POST OFFICE.	Average thickness of vein, in inches.....	System — room and pillar or long wall.....	By what power operated.....	By what power ventilated.....	How many divisions of air in mine.....	Has mine railroad connections.....	Number of kegs of powder used in 1893..
1	Arthur Bell.....	Bell's Bluff.....	Coalvale	30	Room and pillar..	Man.....	Natural.....	1	Yes.....	500
2	Franklin Coal Company	No. 1.....	Pittsburg	32	" "	Horse.....	Furnace.....	2	" "	475
3	" "	No. 2.....	" "	32	" "	" "	" "	2	" "	"
4	Kansas Shaft, Coal and Mining Company	No. 1, Cornell.....	Midway.....	36	" "	Steam.....	Fan.....	4	" "	1,800
5	Western Coal and Mining Company.....	No. 2, Fleming.....	Fleming.....	40	" "	" "	" "	4	" "	3,021
6	" "	No. 3.....	" "	40	" "	" "	" "	4	" "	4,177
7	" "	No. 4, Yale.....	Yale.....	34	" "	" "	" "	2	" "	3,387
8	" "	No. 5.....	" "	36	" "	" "	" "	4	" "	3,652
9	" "	No. 6.....	" "	35	" "	" "	" "	4	" "	3,359
10	Cherokee & Pittsburg Coal and Mining Company	No. 1, Frontenac.....	Frontenac	39	" "	" "	" "	4	" "	12,000
11	" "	No. 2.....	" "	39	" "	" "	" "	4	" "	2,800
12	" "	No. 3, Chicopee.....	" "	39	" "	" "	" "	4	" "	7,700
13	Pittsburg Gas Coal Company.....	Swan.....	Pittsburg	40	" "	" "	Grate fire.....	2	" "	250
14	Pittsburg & Midway Coal Company	No. 2, Midway ²	Midway.....	40	" "	" "	" "	2	" "	20
15	" "	No. 4.....	" "	38	Room and pillar..	Steam.....	Fan.....	2	Yes.....	3,677
16	Wear Coal Company.....	No. 2, Kirkwood.....	Pittsburg	41	" "	" "	" "	2	" "	3,715
17	" "	No. 5.....	" "	40	" "	" "	" "	2	" "	395
18	Minard & Co.....	No. 1.....	" "	40	" "	" "	" "	2	" "	1,432
19	Uley & Donnell.....	Poverty drift.....	" "	42	" "	Horse.....	Natural.....	1	No.....	90
20	Kansas & Texas Coal Company	No. 17.....	St. Louis	39	Room and pillar..	Steam.....	Fan.....	2	Yes.....	1,170
21	" "	No. 20, Pittsburg.....	" "	39	" "	" "	" "	2	" "	1,700
22	" "	No. 22, Litchfield.....	" "	39	" "	" "	" "	2	" "	3,260
23	" "	No. 28 ⁵	" "	36	Room and pillar..	Steam.....	Fan.....	4	Yes.....	2,930
24	" "	No. 37, Litchfield.....	Pittsburg	39	" "	" "	" "	2	" "	1,780
25	Arnott & Lanyon	Arnott & Lanyon.....	Pittsburg	39	" "	" "	" "	2	" "	100
26	Hamilton & Grant.....	Hamilton's No. 3.....	Weir City	40	" "	" "	Natural.....	1	No.....	6
27	James Keller.....	Keller.....	Pittsburg	40	" "	" "	" "	1	" "	80
28	Durey & Walker.....	Hope.....	" "	38	" "	" "	Grate fire.....	1	" "	330
29	T. Root Coal Company	Hooper.....	" "	46	" "	" "	Natural.....	1	" "	70
30	" "	Hooper.....	" "	22	" "	Horse.....	" "	2	Yes.....	1,628
31	S. Cartwright.....	Hurry.....	McCune	38	" "	Steam.....	Fan.....	1	No.....	15
32	Durkee Coal Company	Durkee, No. 4 ⁶	Weir City	40	" "	" "	Natural.....	1	" "	45
33	Okehurst & Ritchie.....	Ridgely drift.....	Pittsburg	42	" "	Horse.....	" "	1	" "	40
34	Little Four Coal Company.....	Independent.....	" "	42	" "	" "	" "	2	" "	50
35	Capt. W. C. Beck.....	Beck drift.....	" "	36	" "	Steam.....	Fan.....	2	" "	75
36	Fuller Coal Company.....	Fuller, No. 1.....	Weir City	36	" "	" "	" "	2	" "	20
37	Central Coal and Coke Company	Yale, No. 9.....	" "	31	" "	Man.....	Natural.....	1	" "	"
38	King & Capron.....	King.....	Arcadia	31	" "	" "	" "	"	" "	"

TABLE OF COAL MINES OF CRAWFORD COUNTY FOR 1893—CONCLUDED.

Office number	Operator.	MINE.	POST OFFICE.	Average thickness of vein, in inches.....	System—room and pillar or long wall....	By what power operated.....	By what power ventilated.....	How many divisions of air in mine.....	Has mine railroad connections.....	Number of kegs of powder used in 1893..
39	W. J. Lanyon Coal Company	Lanyon drift.....	Pittsburg.....	44	Room and pillar.....	Horse.....	Natural.....	1	No.....	870
40	J. C. Sanifer.....	Bevin shaft.....	".....	36	".....	".....	Grate fire ..	2	".....	195
41	E. C. Sheldon.....	Sheldon, No. 1.....	".....	41	".....	".....	".....	2	".....	115
42	Black Diamond Coal Company	Diamond.....	".....	40	".....	".....	".....	2	Yes.....	310
43	George Watkins.....	Watkins drift.....	".....	46	".....	Man.....	Natural.....	1	No.....	50
44	Robert Nesh.....	Nesh.....	".....	38	".....	Horse.....	".....	1	".....	202
45	T. M. Barret.....	Barret.....	Weir City.....	41	".....	".....	".....	1	Yes.....	200
	Totals.....									65,291
	Strip banks.....									696
	Recapitulation.....									
	Averages.....			38½						65,987

¹ Days and output included in mine No. 1.² Abandoned March 1, 1893.³ Formerly known as Minard's.⁴ Abandoned in May, 1893.⁵ Abandoned in March, 1893.⁶ Known as Schwab's mine.

Record of Inspection.

The Bell Company mine is a drift mine, located on a switch of the Cherry Vale division of the Kansas City, Fort Scott & Memphis railroad, one-half mile north of Coalvale and $1\frac{3}{4}$ miles south of Arcadia. System, single entry and room and pillar. There are two openings in connection with this mine. No furnace; natural ventilation; no division in the air current. This mine employs about 20 miners in winter. Capacity, 80,000 to 100,000 pounds per day; thickness of vein, 30 inches; mine was in good condition; air pretty fair. Mr. Bell promised to put in a new furnace. Since my visit there has been a change of bosses, and some improvements have been made, such as the construction of a nut bin, etc.

The Franklin Coal Company operated mine No. 1 last year, a shaft mine on the Gun farm, at Coalvale. During a portion of the year the mine was subleased to other parties—Peter McCall, John Dorsey, and Coleman Morgan; but these men “threw up” their lease before the year was out. About a dozen men were employed in the mine, which was worked by single entry on the room-and-pillar system. Ventilation was by furnace, no division in the air, and I found the circulation quite good on my second visit. This shaft is on the Cherry Vale branch of the Fort Scott & Memphis railroad. Depth of shaft, 45 feet; size, $5\frac{1}{2}\times 12$ feet; airshaft, 4×6 feet. The mine was in very poor condition when first inspected, but when Mr. McCall and his partners took hold of it they made many improvements in brushing, bratticing, etc., which will materially assist in its future operation. Since the strike, the mine has been idle, as before stated. A new hoisting apparatus has been put in, and the entries brushed, preparatory to the introduction of mules.

The Franklin Coal Company's mine No. 2, heretofore known as the Garrett mine, is operated by horse power, on the single-entry plan and room-and-pillar system. There was no airshaft at my first or second visit, nor any means of circulation, as no air course followed the main entry. It must have been sunk and operated on the prospect plan, as the system under which it was operated made a dismal failure. However, Mr. Rombauer, president of the company, claimed the mine to be in good condition; but up to that time he had never seen the bottom of the shaft. I ordered an airshaft sunk immediately; otherwise I would prevent further operation. He began sinking an airshaft, which will be of highest importance. But one thing I would suggest, and that is the abolition of the single-entry plan—by law, or otherwise—as it is detrimental to both men and operators. A new gin has been erected, the airshaft put down, and new ropes and cages provided. The shaft is 39 feet deep; size, 7×14 ; coal, 30 inches thick.

The Kansas Shaft Coal and Mining Company operates a shaft on the Missouri Pacific railway by steam power. The shaft is 61 feet deep; size, 6×9 feet. The coal averages three feet in thickness. The shaft is worked on the single-entry system, with the exception of a few cross entries. Mr.

Craig, the superintendent, intends turning it into double entry as rapidly as is practicable. Capacity of mine, about 300 tons daily. Operations began here in 1891. The ventilation is by means of a fan 10 feet in diameter; circulation is supposed to be in four divisions. There is an overcast on the east side. Much air is lost in travel, on account of break-throughs not being well filled up, or doors not hung in the proper places. Air at east intake measured 5,600 cubic feet per minute, but at face of main east would not register. Measurement on the west side showed 8,050 feet per minute. Measurements show that about 5,000 feet of air coming down the airshaft is lost before reaching the miners. Considerable of a cave in, or squeeze, has occurred between first and second north on the west side, caused by sufficient pillars not having been left. This leaves the mine in bad condition. There is an escapement stairway on one side of airshaft, so partitioned off as to make it almost impossible for miners to go up or down, it being too narrow. It is a hard matter to ascertain whose ignorance or negligence has put the mine in its present very bad shape, as there has been a multiplicity of superintendents and bosses in the past. In the way of improvements, the tipple has been made five feet higher, and a manway put around west side of bottom.

Western Coal and Mining Company's steam-power shaft No. 2, at Fleming, is on the Nevada and Minden branch of the Missouri Pacific railway, in the southern part of the county. At this mine there is a fan 10 feet in diameter and blades 4 feet in width; notwithstanding, the mine is in a decidedly poor condition regarding its ventilation. In the first place, the air has a long way to travel, and as the motto has been "no expense," break-throughs are only partially filled, and but very little attention given to keeping the air courses in order. There have been so many changes in the management, however, that the present incumbent can hardly be called to blame. On the west side, the fourth north entry is in a terrible condition, as the air must filter through immense falls of rock and slate. Rooms from the third entry are driven through to meet the rooms of the fourth entry to make connections for air, and, as a consequence, miners suffer terribly. I found scarcely any breaks between the rooms bratticed or stopped, and very few of those between entries wholly so. Some idea of the want of ventilation can be found by knowing that, with over 18,000 feet per minute of air going down the airshaft, no register could be obtained at the last break-through in any of the entries. Pools of water are allowed to stand in the entries and become stagnant, and through these the miners must wade to their places. I complained of these abuses, and the pit boss agreed to do the best he could. On the 15th of August, sparks from a locomotive ignited the tipple of this mine, and it was utterly destroyed. A new one has been erected.

On my last visit, I found the main west entry in a very bad condition. There were no connections between third and fourth north on the west side.

Lamps would hardly burn, and the roof was unsafe on west entry, between third and fourth north.

Every new boss who is employed here tries to outdo his predecessor in the production of cheap coal, and this curtailing of expenses is done, in many instances, by depriving the miner of the most ordinary requisites to a healthful or safe performance of his day's labor.

Western Coal and Mining Company, Fleming, No. 3. When first I visited this mine it was poorly ventilated, particularly second north on east side, and roof in said entry was in a dangerous condition in many places. In fact, the whole of the east side was far below the average as to ventilation. Back entries, or air courses, are not looked after. In course of time they get blocked, not being properly timbered. On my second visit to this mine, on examination, I found that second and third south entries on west side were not in a fit condition to work in, for want of air. Rooms Nos. 1 and 2 on second south have made connections with rooms on third south, which has improved the condition considerably. On my last visit I found this mine in a fair condition, as the course of the air was shortened and considerable improvements made. Coal is weighed on top, and is credited to the miner at 50 cents in summer and 56 cents in winter. However, there is considerable dissatisfaction among the miners, as they claim the coal is not properly weighed. And indeed such is the fact, as it is impossible to weigh the cars while in motion across a narrow scale, and this has been the custom pursued. The mine is located at Fleming, on the Missouri Pacific, is operated by steam, and has a fan in airshaft. Capacity, 850 tons daily. Workings dry. Roads are in fair condition.

The Western Coal and Mining Company's mine No. 4 is located about three-fourths of a mile west of the Missouri line, on a switch connected with the Nevada and Minden branch of the Missouri Pacific railway. This shaft is commonly known as "Yale No 4," being located near that point. Depth of shaft, 72 feet; size, 7x14; thickness of coal, 2 feet 10 inches. About 160 men were working at the time of my visit. System, partially double entry, and room and pillar. There are two openings, and two ladders, or escapements; one in main and one in airshaft. Capacity, about 600 tons per day. Ventilated by a 10-foot fan; air divided into two circuits. Measurement of air at intake on north side, 3,500 feet per minute, but at the face would not register; air very dull on cross entries, on account of curtains being torn down and break-throughs badly filled or bratticed. Measurement of air at intake on south side, 5,180 feet per minute, but again no registration at face. General condition of mine, outside of ventilation, fair. This mine is operated by imported negro labor from Alabama, a large majority of whom are ex-convicts and noted characters. On the occasion of my first visit to this mine, I witnessed a scene that illustrates the character of the negro miners. One colored miner ran out of the mine, procured a revolver, and returned, bent upon inflicting injuries upon a fel-

low-miner. By active interference, however, he was deterred from committing any desperate acts. Such is the element brought among us to displace the men who dared ask for what justice and the law of the land gave them.

The Western Coal and Mining Company mine No. 5, Yale, is a steam shaft. Depth of shaft, 85 feet; size, 7x14; partial double-entry system, and room and pillar; capacity of mine, 200 tons per day. This mine is connected by switch with Fort Scott & Southern railroad, only being in operation since July, 1892. Ventilation by fan 10 feet in diameter; there are four divisions in air; overcast on east side; an escapement or traveling way is partitioned off the airshaft, which is 3x6. Most of coal is mined by mining machines—six Harrison and one Ingersoll—operated by compressed air. Machine men are paid 4½ cents per foot for mining in rooms, and 5 cents per foot for mining in entries. Measurement of air at intake on east side, 1,980 cubic feet per minute; measurement at last break-through, near face of main east, 1,500 per minute. There were 50 men working on east side. They suffered for want of air, as rooms were worked 90 feet ahead of break-throughs or crosscuts; main east entry was 115 feet ahead of last break-through. Doors and curtains were only in name. Measurement of air at intake on west side, 4,680 cubic feet per minute; total measurement of air at intake, 6,680 feet per minute—just about one-half the amount required for the number of men employed. At last crosscut or break-through, near face of main west, air would not register. Not having a door on first north of west side, only a piece of curtain, consequently the air took the shortest cut to the upcast, leaving the men on the west side of the mine gasping for want of the most important and principal element of nature—air. On west side, I found several places 100 feet in advance of crosscuts or break-throughs. I would recommend the mining boss be entitled to a pension for the knowledge displayed in the mining art. I also found out that they fired shots twice a day in this mine, in violation of the shot-firing law. I was present when several kegs of powder were sent down the mine. I called the attention of the superintendent to the condition of this mine; also to the violation of the shot-firing law. I wrote to the general office, and immediately after a change of mine bosses took place. Mr. Kneedler, who was at that time boss, received a ticket of leave. I have had no complaints from No. 5 since that time.

The Western Coal and Mining Company's mine No. 6, a steam shaft, is located one mile north of Yale, and is connected by switch with the Missouri Pacific railway. The coal is about three feet thick, and of very good quality. Size of shaft, 7x12; depth, 100 feet. For some time ventilation was produced by the action of a steam jet in the airshaft, but a fan 12 feet in diameter has been placed in position over the airshaft, which opening is 5 feet 10 inches in the clear. Measurement of air at intake on west side showed 5,325 cubic feet per minute; at the last break-through on that side, 2,500 feet—the only mine belonging to this company in which I have found the

ventilation at all resembling its just proportion. Condition of mine very fair. Miners were paid at the rate of 56 cents per ton, and their coal was properly weighed.

The Cherokee & Pittsburg Coal and Mining Company's mine No. 1 is located about three-fourths of a mile southeast of the depot at Frontenac, on the Chanute division of the Atchison, Topeka & Santa Fé railroad. Size of shaft, 6x12 feet; depth, 116 feet; average thickness of vein, 3 feet 3 inches; coal, good quality. The work is operated by double entry and room-and-pillar system. Ventilation is by a fan 10 feet in diameter, and the air is divided into four circuits. At intake on east side, measurement showed 22,400 cubic feet per minute, but at face of entry only 2,400 cubic feet per minute. There is a leakage of 20,000 cubic feet between the bottom and face of entry. It should be borne in mind that the whole volume of the air on the east side trails this entry to the face, where it is divided into north and south sections. The enormous leakage above mentioned is due to frequent opening of doors, as well as to several crosscuts not being filled air-tight. In all cases where doors are not closely attended, or where they are poorly fitted, there is certain to be much loss of air. On examining the east side, I found two places very deficient of air, but when notified of them the pit boss remedied the matter at once. I found the ninth north and ninth south on the east side very dry, and the roadways covered with a very fine deposit, known among miners as "dry dust." This dust is almost impalpable in its fineness, and when stirred rises in clouds. This dust is exceedingly dangerous, for when disturbed it floats in the air in large quantities, and it is nearly as inflammable as powder, and the power of its explosion as great as gas, dynamite, or any of the high-power explosives. I am aware that some lawyers declare that this material is not dangerous, for they say it is not inflammable, but practical experience shows that in the confined limits of the chambers of a mine it does its work very effectively. At the recent mining congress held in Europe, the most skillful and learned mining engineers of the world were present, and not one of them denied the dangerous power of this dust. Wherever this material is found, (and wherever mines are dry it is to be found,) close attention should be given to sprinkling the roads. At this mine the roads are supposed to be sprinkled every night, but one man cannot possibly clean out the sump and pump the necessary water, as some of the entries reach nearly a mile from the bottom. However, an effort is made to take reasonable precautions against accidents, which is a great deal more than is done at many other mines in the state. There are 26 cross entries on the east side, and I found the air well kept to the working face, as a whole.

There are a great many non-English-speaking miners at this place, and many of them are ignorant of the first principles governing a miner's safety. On two occasions I had literally to pull men from their rooms, which at the

time were unsafe from lack of timbering, though plenty of props are furnished by the company.

On west side of mine, measurement of air at intake was 22,700 cubic feet per minute, but at face of mine entry registered only 1,620 cubic feet, which loss was mostly caused by doors not being attended to. This side of the mine was in pretty fair condition, excepting the first north entry, where a strong current of air returned to upcast instead of being forced into the workings. This is the largest mine in the state of Kansas, having a capacity of 1,400 tons, daily output. About 350 miners and 80 or 90 day hands are employed. The workings, as a rule, are very dry, and this makes it necessary to water the roads regularly. The escapement stairway of the mine I consider too steep and angular to be safe for the traveling done upon it. No miner or other employé of the company may ride the cages during working hours, and as a large number of the men reside at other points, and come to work on the train, which does not reach there till after work time, they are compelled to traverse this stairway. The mine is well equipped, having self-dumping cages, patent box-car loader, etc. The miners are paid 50 cents per ton, with a 5 cent premium for each hundred pounds of lump coal produced, exceeding 50 per cent. of their product, and equivalent to $2\frac{1}{2}$ cents per bushel. The coal is weighed in the mine in the pit cars, a pair of scales being set on each side of the bottom. Martin Purtle is pit boss on the west side, and John Byrne on the east side.

The Cherokee & Pittsburg Coal and Mining Company's mine No. 2, Frontenac, is located three-fourths of a mile northeast of the Frontenac depot, and is connected with the Atchison, Topeka & Santa Fé railroad by switch. Depth of shaft, 112 feet; size, 7x14. Ventilation by fan 12 feet in diameter; air divided into four separate currents; overcast on the west side of main entries runs east and west. There are 16 cross entries on west side and 12 on east side. First south on west side, in mine No. 2, is connected with first north on west side, mine No. 1. Measurement of air at intake on west side, 18,720 cubic feet per minute; measurement of air near face of main west, 6,000 feet per minute. Fifth north and fifth south on west roadways in entries are very dry and dusty. The roof in third south entry on west is in a dangerous condition. First south on west, roof is bad in many places, and requires timbering, particularly near face, and inside the door of main entry. Measurement of air at intake on east side, 18,550 cubic feet per minute; measurement of face of main east, 11,610 feet per minute. Fifth south on east entry is dry and dusty; first north on east entries and rooms require sprinkling. The mine has been idle since August, 1891, until September, 1893. The general condition of the east side as to ventilation was very good, air being carried to the face of the workings in a systematic manner. Peter McCall, top boss, frequently examines the ropes used for hoisting, and makes it his duty to furnish miners with props

and caps as soon as ordered. Coal is weighed on bottom, having a pair of scales on each side. Miners are paid 50 cents per ton, and 5 cents premium for each 100 pounds over 50 per cent. of their production, which has approximated about 62½ cents per ton, after passing over the usual screen. The stairway in airshaft or escapement was in a dangerous condition, not being partitioned off the airshaft, and having only a temporary railing on outside of stair, called the "guard rail," made fast only at top and bottom of each section; bottom of airshaft not properly timbered. I notified Mr. Wilson by letter, and called his attention to the immediate necessity of attending to the stairway and sprinkling. However, the stairway was overlooked or neglected, and on the night of January 19, 1894, the stairway caved in. This occurring at night was fortunate for those who are necessarily compelled to travel up and down this stairway, as it is customary not to hoist men on cage during working hours. As a rule, this company makes an effort to comply with the mining law, and has the best system of ventilation of any company in the state. When cross entries are advanced a certain distance, the old abandoned workings are cut off on the block system.

The Cherokee & Pittsburg Coal Company's mine No. 4 is located at Chicopee, about four miles southwest of Pittsburg, on a switch of the Atchison, Topeka & Santa Fé railroad. The shaft is 57 feet deep; coal, 3 feet 3 inches thick, and of good quality. About 190 men are employed, and the shaft can easily produce 1,000 tons daily. The mine is rather extensive, having 24 cross entries, which are on the double system. The work is of the room-and-pillar variety. Ventilation is by fan; the air in three sections. Measurement of air at intake on north side registered 25,920 feet per minute; near face of fifth west on north side, 5,859. Measurement of air on south side at intake showed 15,480 feet per minute; at eighth west on south side, 10,460 feet; at face of main south, 2,400. Air is dull in rooms, as break-throughs are rarely filled. I would suggest to pit bosses that, as men are in these rooms from morning till night, perhaps a good current of air traveling through the rooms would be of no detriment to the miner. No. 4 is entitled to the distinction of having the best roadways in the state, and its general condition is equal to the best, and superior to the most; in fact, this company comes nearer filling the requirements of the law than any in Kansas. Their officials, with a possible exception, appear anxious to take all the precautions for the safety of their employes that circumstances will permit. The men are paid 50 cents per ton, with a premium of 5 cents for each hundred pounds of lump coal, exceeding 50 per cent. of their total production, making the price approximate 62½ cents per ton. The coal is weighed in pit cars at bottom of shaft, and then weighed again after passing over the screens, on top. Early in April a cave in occurred on the east side, reaching the surface. At the time there was a prevalence of heavy storms, and the water courses of the county were overflowing in all directions. Near the mine is a small creek,

which, like the rest of its kind, assumed large proportions, and, spreading out into the valley, inundated the mine. So much of it came in that the roadways were covered with a deposit of slush after the water had been removed. Mr. Connors deserves a good share of credit for the ability he displayed in getting out the water and cleaning up the mine, to have it in the fine shape it is at present. The mine is well fitted up with machinery—self dumping cages, box-car loader, etc.

The Pittsburgh Gas Coal Company's shaft is located on the Deets farm, two miles west of Pittsburgh. Size of shaft, 5 x 10; depth, 101 feet; thickness of vein, 3 feet 4 inches. This mine was sunk in 1892, and at the period of my first visit employed 11 men. The shaft now operated is meant to serve as an airshaft, and entries are being driven toward the future location of main shaft, on 'Frisco railway. Late in the year the sinking of the main shaft was begun. Hoisting by steam power. Ventilation carried on by grate fire, and is fairly good, although at first the grate was by far too close to bottom of shaft. Some coal has been shipped, but has been hauled by wagon to the railroad. Miners are paid by the car; cars hold about 10 bushels, for which the men receive 20 cents; top is a good, strong slate; worked on the double-entry plan and system of room and pillar. The coal in this shaft is the best quality of gas coal in the state.

The Pittsburgh & Midway Coal Company's shaft No. 2 is located six miles east of Pittsburgh, and is connected with the Atchison, Topeka & Santa Fé railroad and the St. Louis & San Francisco railway. This mine worked 42 days in January and February of last year, producing 157,389 bushels of coal, but, being worked out, was abandoned March 1, 1893.

The Pittsburgh & Midway Coal Company's mine, shaft No. 4, is located one-half mile north of Midway, on the Atchison, Topeka & Santa Fé and the St. Louis & San Francisco railroads. The shaft is operated by steam power, is 65 feet deep, and in size 8 x 15; coal is 3 feet 2 inches thick, and of a good quality; worked by double entry, on room-and-pillar plan. The airshaft is 8 x 8, with 4 feet partitioned off and supplied with escapement ladders. I wish to say that this mine has the best traveling over its escapement of any mine in the state that I have visited. Miners are not allowed to ride the cages at any time, and, owing to the fine condition of the stairway, I believe in this one instance this to be the safest plan. Ventilation by means of fan 12 feet in diameter; air divided into two currents. Measurement of air at intake on east side, 4,680 feet; in first south on west side, 4,320 feet. No registration could be obtained near the face of the entries, and on the main east there is a great leakage, caused by doors not fitting and properly attended. All over the pit I found the air wasted, instead of being driven into the workings. As a consequence air was very dull, caused by having curtains hung, which are only a temporary affair at best, as they are often torn down by cars or blown away by recoil of the blasting. I found the mine to be very dry and dusty. I called Mr.

Jones's attention to this, and he agreed to have the dry roadways watered regularly. Miners are paid 50 cents in summer and 56 in winter per ton, mine run. There are about 130 men employed. A new five-ton scale has been put on the pit top, to comply with the screen law ordering coal weighed before being screened.

The Wear Coal Company's mine No. 2 is a steam power, located at Alston, commonly known as Kirkwood, two miles southeast of Chicopee, and four miles southwest of Pittsburg, on the Cherry Vale division of the Fort Scott & Memphis railroad. Depth of shaft, 30 feet; size, 7x12. There are three openings: Main shaft, air shaft, and a slope, which is used as a traveling way for men and mules. Ventilation by a fan 12 feet in diameter; partial double-entry system; average thickness of coal, 3 feet 5 inches; capacity of mine, about 600 tons per day. This mine commenced operation in July, 1890. There are two divisions in air current. Measurement of air at intake on east side, 6,480 feet per minute; measurement of air at last break-through in first south on east, 2,240; measurement of air at intake on west side, 8,940 feet per minute; total, 15,420 cubic feet per minute. This is about 80 cubic feet per man, as 190 men were employed, notwithstanding the torchlights, which were carried by mule drivers, all of which use coal oil, mixed with black oil. I found cross entries in this mine poorly ventilated, and a continual cloud of smoke rolled around, which could be very easily remedied, if only properly looked after by those in charge. Water on main east entry was allowed to stand and become stagnant, and miners had to walk through it morning and evening, unless they were fortunate enough to get a ride. This mine, as a whole, was in a deplorable condition. On my second visit, December 4, there was no change made, and the condition of the mine was worse, if any, as to ventilation. I notified Mr. Kirkwood, the superintendent, and he promised to have the necessary changes made. In this case I believe the mine boss was at fault, as the miners claimed he never went around the mine, except on measuring day. Miners are paid 50 cents per ton in summer and 56 cents in winter.

The Wear Coal Company's mine No. 5, commonly known as the "Minard shaft," is on the Missouri Pacific railway, 1½ miles northeast of Pittsburg. Size of shaft, 6½x14 feet; depth, 34½ feet; thickness of vein, 3 feet 4 inches; coal, good quality. Mine is operated by steam; has a capacity of about 360 tons daily; has three openings: main or hoisting shaft, air-shaft, and an escapement shaft having a good stairway. Over the airshaft is an 8-foot fan, affording good ventilating power. The air is divided into two currents. Ventilation very fair, and roadways in good order. As a whole, the mine is in good order. The railway switches were lengthened over 200 feet, thus increasing capacity. The Wear Coal Company obtained possession of this mine in October, 1893, by purchase from Minard & Co.

The Minard & Co. shaft No. 1, now known as Wear No. 5, was sold to the Wear Coal Company in the latter part of October, and was operated by

the latter company 36 days in the year. Minard & Co. had put the shaft in good order, and prior to the strike worked 144 days, with a force of 80 men, and produced 435,133 bushels of coal. Only general repairs had been made prior to the sale.

The Utley & Donnell drift mine has been opened off the face of a strip bank located on the northeast corner of the Chaplin addition to Pittsburg. This mine commenced operation in July, 1893. Entries are driven parallel with face of strip bank. System, room and pillar and double entry; thickness of coal, 3 feet 8 inches; roof, average; natural ventilation; roadway, very wet, as the water flows into the mine from strip bank. This mine has no railroad connection; mostly local trade. Coal sells at mine for 6 cents per bushel.

The Kansas & Texas Coal Company's mine, shaft No. 17, is located one mile north of Litchfield, on the St. Louis & San Francisco railway. The mine was a steam shaft, ventilated by a fan. During the early part of the year the mine worked 80 days, with 98 men, and produced 670,800 bushels, but was worked out and abandoned in May, 1893.

The Kansas & Texas Coal Company's mine, shaft No. 20, is on the St. Louis & San Francisco railway, about $1\frac{1}{2}$ miles west of Pittsburg; is operated by steam; shaft is 57 feet deep; escapement is partitioned off from the main shaft. Miners are compelled to travel up and down this stairway, for, by the company's rules, no one but pit bosses and mule drivers are allowed to ride on the cages. Traveling on stairs constructed as this one is, is very dangerous, as men have everything to carry down — dinner pails, picks, drills, powder, etc. Should a man happen to drop some of his tools, a man beneath would stand small chance of escaping injury; and there are often 10 or 15 men on these ladders at once. Besides the hoisting shaft, there are two openings, an airshaft and a pump shaft. Pump and main shafts are both used as upcasts. The workings are carried on partially by single and partially by double entry, and room and pillar, or, more properly speaking, gouge system. As a natural consequence, the mine is in a deplorable condition. The managers agreed to change to the double entry as rapidly as possible, which agreement they did not fulfill. The plan of ventilation in vogue is exceedingly poor. The chief object of the operators seems to be to save expense; consequently, to gain this end, the health and comfort of the miners are unscrupulously sacrificed. Doors are required on ninth east, on south side; and, also, in fifth west, south side. The third and fourth west, on south side, are in a *very* bad condition. As in several other places, men, to get to their work, must wade to their knees in stagnant water. This is also the case with the first and third east, on the north side, and the first north off second west, on north side. A blind entry, going south off the first east, on north side, has scarcely any air at all in it. Some of these blind entries are 120 feet ahead of the air, crosscuts not having been made between rooms. I wrote, early last May, to Mr. Doubleday, the superintendent

ent, who resides here, regarding the necessity of an overcast on the north side. I received no answer from him. I then wrote to Mr. Hobart, president of the company, but have received no answer from him either. I made the mine another visit, and tried to get measurements of the air. At bottom of downcast, the anemometer registered 6,450 feet per minute on the south side, and 3,670 on the north—a total of 10,120 feet; but within 30 feet of the bottom the air course was so stopped up by fallen stone that I could not crawl through it. I asked that these air courses be either cleaned out or enlarged; but nothing has been done. I have made my last request of this company, and shall at once take very active measures to enforce the law in this mine. About 80 men are employed at the shaft, and are paid 2 cents a bushel, mine run. There is no check weighman.

The Kansas & Texas Coal Company's mine No. 22 is a steam shaft, 50 horse power, located one mile northeast of Litchfield. Depth of shaft, 65 feet; size, $7\frac{1}{2} \times 15$; airshaft, $7\frac{1}{2} \times 7\frac{1}{2}$. Ventilation by a fan 12 feet in diameter; air divided into two separate currents. System, so-called double entry and room and pillar. This mine commenced operation in 1889. Capacity of mine, 600 tons per day. A stairway is partitioned off main shaft, by which miners travel into and out of mine, as employes are not allowed to ride on cage; stepladder in airshaft. Measurement of air at intake on south side, 7,200 cubic feet per minute; at face of south entry, 960 cubic feet; thus showing a loss of 6,240 feet per minute, on account of not having break-throughs properly filled and curtains or doors adjusted in proper place. Measurement of air at intake on north side, 13,200 cubic feet per minute; would not register at face of north entry; fourth west on south, air dull at face, and break-throughs left open. This mine could have been one of the best mines in the district, but the idea of the mine boss was that anything was good enough for those imported negroes, who were confined inside of a fortification nine feet high, and guarded by men devoid of principle, who were willing to shed blood, if necessary, for the nominal sum of \$2 per day, in order that a greedy corporation might override honest labor and trample humanity in the dust. Humanity and Christianity were surely forgotten inside of this stockade, as the colored element which was imported to take the place of white labor was corralled inside this fort—Anderson prison. Some of these burly Africans were led to believe that Litchfield was not the "promised land," and said "slavery day" had come again. On the occasion of my first official visit to this mine, I was met at the gate by an ex-policeman of Pittsburg, Kas., who carried a 44-caliber revolver, and demanded of me to halt and make known my business. Mr. Wm. Galbraith accompanied me, and Mr. Crandell positively refused to have Mr. Galbraith enter inside the stockade. Since that time the great storm of indignation has subsided, and the colored element plods along, very often regretting that they ever left the sunny South, and now realizing that it is impossible for them to make a living, as the majority of

them never mined any coal; consequently they are left to make the best of a bad job. They claim their coal is not properly weighed, and the necessities of life are very often wanting, as due precautions are taken that they will not be allowed to overestimate their earnings. Credit is not given them at the company's store only in accordance with the amount of coal produced.

The Kansas & Texas Coal Company's mine, shaft No. 28, is located one mile north of Pittsburg, on a switch of the St. Louis & San Francisco railway. Mine was operated by steam power; was worked out and abandoned in March, 1893; worked only 42 days in the year, employing 77 men, and producing 231,625 bushels of coal; miners were paid 4 cents per bushel for lump coal.

The Kansas & Texas Coal Company's mine, shaft No. 37, is located $1\frac{1}{2}$ miles north of Litchfield, on a switch of the St. Louis & San Francisco railway. It is operated by steam. The coal is but 3 feet thick, and is reached by a shaft 60 feet deep. Capacity, 400 tons daily; system of work, double entry and room and pillar; commenced operations early in 1891; ventilation is by a fan of 12 feet diameter, and air is divided into four currents, with overcast on west side; measurement of air at intake on west side, 7,800 feet; on east, 7,500 feet per minute, and return to upcast, 16,300 feet; ventilation, as a whole, fair; escapement partitioned off main shaft, and ladders were in fan shaft; about 140 men, mostly Alabama negroes, were employed at the period of my visit.

Arnott & Lanyon's shaft mine is a steam power, located two miles north and three-fourths east of Pittsburg, on a switch of the Atchison, Topeka & Santa Fé railroad. Depth of shaft, 50 feet; size, 8x16; ventilation by fan 10 feet in diameter, $3\frac{1}{2}$ feet in blade; good stair in airshaft; two divisions in air current; system, double entry and room and pillar; capacity of mine, 300 tons per day. This mine commenced operations in July, 1892; average thickness of coal, 3 feet 3 inches; roads in good condition; roof, pretty fair; employs about 80 miners; air, very fair; measurement of air at intake on north, 6,300 feet per minute; measurement on south, 3,000 feet per minute; at face of south, only 1,500 feet—a leakage of one-half, on account of bad doors and stoppings not made air-tight. In way of improvements, 1,100 feet of railroad switch for empty cars, also hay barn, 16x24, have been built.

The Hamilton & Grant mine, shaft No. 3, is a steam-power shaft, located three-fourths of a mile north of Weir City Junction, on the Kansas City, Fort Scott & Memphis railroad. Size of shaft, $6\frac{1}{2}$ x12 feet; depth, 35 feet; thickness of vein, 3 feet 4 inches. It is operated by a combination of double and single systems, on room-and-pillar plan. This is a new mine, having been sunk in the fore part of the year, and began hoisting in September. Nothing but mine run was loaded in 1893. Miners were paid 56 cents per ton. No airshaft has been put down, but two feet have been partitioned off

the side of the main shaft for an airshaft and escapement. Hamilton & Grant lease from Mr. Sheward, paying one-half cent royalty for lump coal over a 14-foot screen. At close of the year, 24 men were employed.

James Keller's drift mine is located on the Cellie farm, 1½ miles southwest of Pittsburg; leases the coal on a royalty of 1 cent per bushel. Commenced operation in August, 1893. Thickness of vein, 3 feet 8 inches; has pretty fair roof, and coal of fairly good quality. Depends entirely upon local trade. Employed two men.

The drift mine of Durey & Walker is located one mile south of Pittsburg; connected with Missouri Pacific railway; ship a small amount of their coal, but sell most of it to local customers. Coal of fair quality; vein 3 feet 8 inches thick. Lease their coal for 1 cent per bushel royalty. Employ four men, and pay 2½ cents per bushel.

Taney Root's shaft mine is a horse power, located one mile southwest of Pittsburg and a little north of the Nash mine. Depth of shaft, 32 feet; size, 5x6; average thickness of coal, 3 feet 2 inches; capacity, 100,000 pounds per day; system, single entry and room and pillar. A good airshaft has been sunk, and connections made with main shaft; ventilation by a pot fire. Coal is of a good quality. Entries are not brushed, this being a new shaft. Commenced operation July, 1893. This mine was well equipped, at a cost of \$1,000. Coal was hauled in wagons to the railroad, at a cost of 45 cents per 100 bushels. The price realized was an average of \$1.50 per ton—only a margin of 5 cents per ton, not sufficient to cover contingent expenses; consequently this mine was forced to close down at the close of 1893.

Hooper slope is located 1½ miles west of Pittsburg; does some shipping, but the most of his trade is local; vein, about 3 feet 10 inches; leases for 1 cent per bushel royalty.

Samuel Cartwright's shaft mine is located 1½ miles from the town of McCune, on the K. C. Ft. S. & M. railroad. Shaft is 25 feet deep, with a vein 1 foot 10 inches in thickness, and of fine quality coal. Mr. Cartwright has persevered against great difficulties in sinking this shaft. He so aptly named it the "Hurry" mine, as he said it hurried him to get it finished. He began operations just at the close of the year.

The Durkee Coal Company's mine No. 4 is a shaft mine, located on the farm of John Schwab, and generally known as the "Schwab" mine, 2½ miles north of Weir City, on a branch of the K. C. Ft. S. & M. railroad. Depth of shaft, 50 feet; coal 3 feet 2 inches thick; steam power; operated by single entry; system, room and pillar. A new airshaft, 6 x 8 feet in size and 50 feet deep, has been sunk. Ventilation by fan; air in two currents. At face I could find no air, and, in fact, nowhere where the single-entry system is in vogue have I found ventilation in a healthful condition.

The Akehurst & Richey mine is a drift on the Ridgeley farm, one-half mile northwest of Pittsburg. Their trade is entirely local. Commencing operations in December, they put out over 10,000 bushels, for which they

found ready sale. The coal is of a fine quality, but they labor under the disadvantage of having a very poor roof.

The Little Four Coal Company, of Pittsburg, during the earlier part of the year, operated a slope one mile southeast of the Kansas City, Memphis & Gulf depot, employing 7 miners, 2 pushers, weighman, and trackman, working 54 days, paying in the summer 50 cents per ton and in the winter 56. In December the slope was abandoned, and a main shaft and airshaft were sunk, one-half mile south of the old slope. The shafts are 30 feet in depth, and the coal averages about 44 inches in thickness. A new tippie and gin were erected, with screens 8 feet long and 4 feet wide. The mine has no railroad connection, but considerable coal is shipped, being hauled by wagon to the railroad. This company also stripped a small amount of coal early in the fall. The men who compose this company are to be congratulated upon the perseverance and pluck they have exhibited, as upon the conclusion of the mining troubles last summer they could obtain no employment, and being thus driven to coöperation, they made the best possible use of a bad state of affairs and went to work with a will. Being all skillful and practical men, each did his best in the labor of production, under the direction of Mr. Halliday, whom they had elected as pit boss. They mined and sold upon the car quantities of coal to the large companies, but met a staggering blow in delivering several hundred dollars' worth to one of the corporations (now in the hands of a receiver), which they have been unable to collect. However, they stuck to their work, and now are a fair evidence of what coöperation can do.

The slope operated by W. C. Beck is located one-half mile southwest of Pittsburg. His coal is mined for shipping, and is of a fair quality. Produced 12,000 bushels; worked out and abandoned.

The Fuller Coal Company has sunk a new shaft $2\frac{1}{2}$ miles west of Mulberry station, on the Waterman farm, and connected it with the Kansas City, Pittsburg & Gulf railway. Depth of shaft, 40 feet; size, 7x15 feet; system, double entry and room and pillar; coal is about 3 feet thick; miners work by the day, at the rate of \$2 per diem; and everything, so far, is in first-class order. Mr. G. W. Elliott, the underground superintendent, has laid off the mine in a manner deserving of credit. He denounces the single-entry system in the strongest terms, is intending to supply the mine with plenty of fresh air, and lays down an example for some of our brilliant mine bosses to follow. The mine is fitted with approved machinery.

The Central Coal and Coke Company's mine No. 9, Yale, is a steam power, located four miles northeast of Pittsburg, on a switch of Kansas City, Pittsburg & Gulf railroad. Depth of shaft, 83 feet; size, 7 x 16; system, double entry and room and pillar; average thickness of coal, 3 feet. This is a new mine, and commenced operations in December, 1893. An airshaft has been sunk, and a fan 14 feet in diameter will be erected to ventilate this

mine. Miners were paid by the day, as they were making the necessary preparations by brushing and lifting of bottom, etc.

The slope operated by King & Capron lies one-half mile south of the Kansas City, Fort Scott & Memphis railroad depot, at Arcadia. This slope has been recently opened, and employs but seven hands, though the management hopes to increase the capacity materially. The coal is of very good quality, about $2\frac{1}{2}$ feet thick.

The W. J. Lanyon Coal Company's slope is located one-half mile south of the Lanyon smelting works, at Pittsburg. Most of the coal mined was used in the smelting works, though some was hauled by wagon to railroad switch and loaded for shipment. There were two openings besides airshaft; ventilation by natural power. Mine was leased to the Little Four Coal Company, and by them worked out, and was abandoned in December.

J. C. Santifer's shaft mine is a horse power, located two miles north and one west of Pittsburg, on T. O. Bevin's place. There are two openings, but the airshaft is sunk directly over and down into the main entry. As a natural consequence, the air rushed up or down one or the other of the shafts, as they were about 80 feet apart, leaving the rest of the mine in a terrible condition as to ventilation. I ordered an air shaft sunk and the necessary improvements made. Mr. Santifer did not comply, and I caused the mine to suspend operation. Up to date they have not made any changes.

The E. C. Sheldon, or the Sheldon Coal Company's shaft, is situated about $1\frac{3}{4}$ miles north of the city of Pittsburg, and has no railroad connections. Coal is 3 feet 4 inches thick; shaft, 33 feet deep; size of shaft, 6x14 feet. Hoisting is by horse power; no mules in mine, and entries not brushed. Ventilation by grate fire. Very fair system, partial double entry. Coal is hauled in wagons $1\frac{3}{4}$ miles to railroad switch.

The Black Diamond shaft mine is situated about one-fourth of a mile southwest of Pittsburg, on a switch of the Missouri Pacific railway, and is 25 feet deep; hoisting by horse power. There are no mules in the mine. The men are paid 20 cents for a 10-bushel car. The mine is operated by W. A. Wimmer, who has sunk an airshaft and put in a furnace.

The Geo. Watkins slope is located a little over a mile southwest of the city of Pittsburg, on the Playter farm. Mr. Watkins pays to Mr. Playter 1 cent a bushel royalty. Commenced operation August, 1892; thickness of coal, 3 feet 8 inches; sells coal at mine to local trade; employs four men.

Robert Nash's shaft is a horse power, and is located one mile south of Pittsburg. Depth of shaft, 24 feet; size, 5x6; thickness of coal, 3 feet 2 inches; two openings; natural ventilation. This man Nash caused more agitation than any other operator in the district, as he was not willing to do anything toward improving the condition of the mine, which was in a horrible condition when I first inspected it, having no system of ventilation. Miners carried old tablecloths and sheets into the mine, hanging

them at break-throughs and crosscuts. When his mine boss made known my first and second visit to Mr. Nash, and informed him what changes had to be made, otherwise I would enjoin him, Mr. Nash discharged Mr. Curry, the boss. However, a change has been made, and the mine is now operated by Mr. Calhon, who understands how a mine should be ventilated and operated.

T. M. Barret's slope mine is located at the 'Frisco crossing, four miles south of Pittsburg. A shaft has been sunk close to the railroad track, and the coal will be hoisted by horse power. I did not inspect this mine. I made two visits and found the mine idle on each occasion.

Analysis of the Earnings of the Crawford County Miners for 1893.

This is the banner county of the state, both in the production of coal and the number of employes. During the year, 28,907,375 bushels were produced, and 2,558 men were employed as miners, averaging 11,300 bushels for the year for each miner. The average price paid for mining in the county was $2\frac{1}{2}$ cents per bushel. We find, by a reference to the table, that the mines of Crawford county worked a total of 4,939 days, an average of of $114\frac{3}{4}$ to the mine, or about 36.78 per cent. of the working days of the year. We also find that 3,665 men were employed in and about the mines, and directly dependent upon them as a means of subsistence. Calculating that enough of those so employed are the heads of families to make the proportion of unemployed 3 to 1 who are thus dependent (I believe this to be the rule), there are 14,660 people directly dependent on this industry, or about 40 per cent. of the population of the county. Consequently, believing that an industry upon which this large proportion of people depend must be of highest interest to the people of the state, and merits from our legislators the most just and careful attention, I herewith submit this analysis. Let us begin, then, by carefully examining the foregoing table, which has been compiled from reports furnished me by the operators of the mines. The average production of each miner is 11,300 bushels, for which he is paid $2\frac{1}{2}$ cents per bushel. We find his earnings to be \$242.14. To this we will add one-fifth, to pay for the piecework done by the miners, and for which no regular day hands are employed. One-fifth of \$242.14 is \$48.42; add \$242.14, and his earnings reach the sum of \$290.56 for $114\frac{3}{4}$ days' work, or about \$2.53 per day. Pretty fair wages, one would say at the first glance; but let us go a little further. It is an established custom among miners that upon days when there is no hoisting the miner goes into his place to get as much coal loose and ready to load as possible, in preparation for the next day upon which the mine hoists. It is safe to say that for every day's work shown in the table the miner has worked $1\frac{1}{2}$ days, or 172 days, instead of $114\frac{3}{4}$, for the year.

Another great item to be taken into account when calculating the miner's earnings is his expense account, and of which persons unfamiliar with

the mining industry know nothing. The table shows that 65,291 kegs of powder were used in the county, an average of $25\frac{1}{2}$ kegs to the miner. For this powder the miner pays \$2 per keg, or \$51 a year for powder. He has worked 172 days, in which time he has used seven gallons of lard oil, for lighting purposes, as a gallon will last just about 25 days. The average price of his light for the year has been \$5.25. For having his tools sharpened, the miner pays \$1 per month, if the mine hoists more than half time; if less than half time, 50 cents. The table shows that the miner worked $4\frac{1}{2}$ months, of 26 days each; hence his blacksmithing would be \$4.50 for the year.

The companies furnish the shot firers with squibs with which to fire all shots, but every miner is charged 25 cents a month for the proportion of squibs his shots are supposed to require. Thus, his squibs for the year were \$1.12. As in most cases the shots must remain at least three hours after being tamped before they are fired, and the majority of the coal in this county is, to say the least, damp, then it follows that the miner must make his cartridges of paper that will resist moisture. To make these cartridges requires waterproof paper and no small quantity of soap. These will cost fully \$1 per month; hence, here is another item of \$4.50.

A miner's outfit of tools in this county consists of drilling machine, shovel, sledge, wedges, four or five picks, and powder and oil cans. These are to be kept in repair, and, as the dampness of the mine soon eats out the cans and shovels, his expense in this line is at least \$4.50 more. Here, then is quite a nice little sum to be taken from the earnings before a computation can be made.

It has been freely circulated, and is considered almost an indisputable fact by men not conversant with the mining industry, that miners, particularly those of Cherokee and Crawford counties, earned wages averaging from \$2.50 to \$4 per day. No doubt some one or more may have done so at intervals, and for a limited time. But this analysis is based on the miner's production, and I deem it my duty to give the facts as they are, without favor to anyone. Perhaps the following table may be of some use in that direction:

<i>Earnings</i>	\$290 56
<i>Expense</i> :	
Powder.....	\$51 00
Lard oil.....	5 25
Smithing.....	4 50
Squibs.....	1 12
Paper, soap, and cotton.....	4 50
Repair of tools.....	4 50
Total.....	70 87
Balance, or net earnings due the miner.....	\$219 69

Which is, in reality, the earnings of 172 days, though credited to only $114\frac{1}{2}$.

This earning of \$219.69 gives a net daily earning for the $114\frac{1}{2}$ days

which the mine worked of \$1.91 $\frac{4}{10}$; for the 172 days which the miner really worked, a trifle over \$1.27; for the 312 working days of the year, 70 $\frac{1}{10}$ cents; and for the 365 days of the year, 60 $\frac{2}{10}$ cents. Unfortunately, but very few miners of this county own their homes, and it is safe to say fully 90 per cent. live in rented houses, paying, on an average, \$5.25 a month rent, or about 17 cents per day. This rent, of course, must be paid for every day. After subtracting this 17 cents rent money from the 60 $\frac{2}{10}$ cents, we find the tenant miner possessor of the munificent sum of 43 $\frac{2}{10}$ cents for a daily income. Calculating, as we have, that a family comprises four persons, they must be fed at a cost of 2 $\frac{1}{2}$ cents per head for each meal, or 30 cents a day for the family. This would leave the miner 13 $\frac{2}{10}$ cents with which to provide the necessaries of life, such as furniture and bedding, fuel, lights, soap, dishes, etc. From this same 13 cents must come clothing, medical attendance, and the educational necessities of his family, books, slates, etc.

Another thing which is not understood by the people who are not conversant with actual mining is the system in vogue by which boys are worked in the mine, but do not appear on the companies' books. Herein lies the explanation of the wonderful earnings alleged to have been earned by individual miners. In many instances there may be a boy in the family of 15 or 16 years of age. This boy goes to work with his father. Each miner is given a numbered check, and his name is entered on the company's books opposite that number. One of these numbered checks must accompany each car of coal coming out of the mine, that the weighman may know to whom to credit the weight of the car. The father goes to the weigh boss and is given a number, and not only what he mines himself, but the product of the boy's labor also, appears with it, and as if one man alone had done the work. Indeed, I have known of cases where a father and two or three sons have occupied two or three places in the mine, but whose product all appeared upon one number; and I have also known officials of the corporation to willfully mislead by showing the account of that number as the earnings of one man alone. The average price of the county is given as 2 $\frac{1}{2}$ cents per bushel, which is the fact, though one or two places pay considerable more. As, for instance, the Cherokee & Pittsburg Coal and Mining Company pays 50 cents a ton for unscreened coal, and adds a premium of 5 cents for every 100 pounds of lump coal the miner can produce in excess of 50 per cent. of his output. Thus, if a ton of unscreened coal produces 1,000 pounds of lump coal after being screened, the miner is paid 50 cents; if it produces 1,100 pounds, he receives 55 cents; if 1,200 pounds, 60 cents; and rising thus to \$1 for 2,000 pounds of lump coal; and this system is claimed to be equal to 2 $\frac{1}{2}$ cents per bushel, or 62 $\frac{1}{2}$ cents per ton.

TABLE SHOWING EARNINGS OF MINER IN CRAWFORD COUNTY FOR 1893.

Average number of days mine worked.....	114 $\frac{3}{4}$
Average number of bushels produced per miner in the county.....	11,300
Average price paid per bushel for unscreened coal.....	50 02 $\frac{1}{2}$
Average earnings per miner for the amount of coal produced.....	\$242 12
Adding one-fifth of miner's earnings for yardage, room turning, and cutting faults.....	48 42
Miner's total earnings.....	\$290 64

MINER'S EXPENSE FOR THE TIME WORKED.

Powder.....	\$51 00
Lard oil.....	5 25
Blacksmithing.....	4 50
Squibs.....	1 12
Paper, soap, and cotton.....	4 50
Repair of mining tools.....	4 50
Total expense.....	70 87
Balance, or net earnings due the miner.....	\$219 69
Average daily earnings for 114½ days mine worked, less expense.....	\$1 91
Average earnings for 312 working days of the year.....	70 ¹⁵ / ₁₀₀
Average earnings for 365 days of the year.....	60 ³ / ₁₀₀
Average daily rent to miner, 17 cents, leaving.....	43 ⁷ / ₁₀₀
Calculating four persons to each family, at a cost of 2½ cents each per meal, or 7½ cents per diem, is 30 cents, leaving.....	13 ² / ₁₀₀

ELLSWORTH COUNTY.

This county is situated in nearly the center of the state, and while it is probably a fine agricultural section, such cannot be said of it as a mineral producer. The vein found there is only about 12 inches in thickness, and I could find but two small drifts in the county. The coal is of the lignite variety. These two mines are operated by lease, on a royalty of 1 cent per bushel; however, one-fourth of that amount would be sufficient, considering the surroundings. No coal is shipped, but sold on the dump to teamsters. I found 30 men and boys employed, who produced about 60,000 bushels, or .083 per cent. of the entire output of the state, the estimated value of which is \$7,800. Miners are paid 8 cents per bushel for mining, and coal is sold at mine for 13 cents per bushel.

TABLE OF ELLSWORTH COUNTY.

ITEM.	C. W. Kelly, Smoky Hill mine, Wilson.....	W. S. Waterbury, Waterbury mine, Wilson.....	Total.....
Number of days worked in 1893.....	150	160	310
Number of bushels mined in 1893.....	40,000	20,000	60,000
Estimated value of output.....	\$5,200	\$2,600	\$7,800
Average number of miners employed.....	18	9	27
Average number of day hands.....	2	1	3
Average number of all employes.....	20	10	30
Average price paid per bushel.....	8	8	
Kind of opening—shaft, drift, or slope.....	Drift.	Drift.	
Has mine two separate openings?.....	Yes.	Yes.	
Kind of coal.....	Lignite.	Lignite.	
Thickness of vein, in inches.....	12	12	
System—room and pillar or long wall.....	Long wall.	Long wall.	
By what power operated?.....	Man.	Man.	
By what power ventilated?.....	Furnace.	Natural.	
How many divisions of air in mine?.....	2	1	
Has mine railroad connections?.....	No.	No.	

Record of Inspection.

C. W. Kelly's drift mine is located three miles south and one-half mile west of Wilson. Most of the coal produced is sold at the mine. This mine has been in operation since 1891. System, long wall; ventilation by a furnace; average thickness of coal, 12 inches; price paid for mining, 8 cents

per bushel; selling price at mine, \$3.25 per ton. There were 16 men employed when I visited this mine; miners have to push their coal from the face to the dumping place on tippie; coal is not weighed until loaded into the wagon of the purchaser, every miner having a place set apart for his coal near the entrance to the mine. The miners aim to equalize the amount sold by each, as near as possible. Entries are from $2\frac{1}{2}$ to 4 feet in height, and an average miner mines about from 10 to 12 hundred weight per day. A great portion of the miner's time is taken up in pushing coal from 500 to 700 feet in small cars, averaging $2\frac{1}{2}$ hundred weight per car; mine was in a very fair condition; and in the way of improvements, 270 feet have been driven.

The drift operated by W. S. Waterbury is situated a short distance from the Kelly mine, and works the same vein of coal. Mouth of the drift is in Russell county, but the workings are in Ellsworth. Miners are paid \$2 per ton the year around. Coal is lignite, and about 12 inches thick, of poor quality, but sells readily for \$3.25 per ton at the dump. No accidents have been reported from this mine. The mine was in fair condition at the time of my visit.

FRANKLIN COUNTY.

Kind of coal, bituminous. Average thickness of coal, 1 foot $2\frac{1}{2}$ inches. There are 2 shafts and 13 drifts in Franklin county, which last year produced 405,590 bushels, valued at \$32,447.20. In addition to this, the strip mines produced 145,700 bushels, valued at \$11,656; making a total of 551,290 bushels, or .765 per cent. of the total output of the state. Estimated value, at 8 cents per bushel, \$44,103.20. The mines worked, on an average, 173 days, or $55\frac{4}{10}$ per cent. of the working days in the year. Average number of men employed daily, 150. Most of the mines in this county produce but very little coal in the summer time. The apparent reason for this lies in the fact that, outside of the Ransom & Simms mine, and a few around Pomona who haul by wagon to the railroad, no shipping is done, but they depend upon the local trade for the disposal of their coal. At all mines in the county, except the Ransom & Simms works, a miner not only digs the coal, but must deliver it on the tippie, having, in some instances, 400 yards to push the coal. Very little attention is paid to the mining law in this district, and none whatever to the health of the miner, in the majority of instances. Men will open a drift, and, making no calculation of substantial improvement looking to the futurity of the mine, or to their own health, drive as far into the bank as their imperfect ventilation will allow them to go, and then, when choked out by bad air, abandon the place, only to open up and butcher a new one. As a consequence, there are a great many irregular-shaped pieces of coal left among these old workings, of which perhaps but very few would pay to work out, but which, in the aggregate, entail an enormous loss to the mineral wealth of our state. Legislation should carefully and wisely look after this matter, as sometime the limit of our resources

in this direction will be reached. As regards the strip-coal industry, it is carried on very much as is the drift system. I found it almost impossible to collect reliable data. Between my predecessor's report of this county and my own there is a great discrepancy, but I have here reported every mine, also every bushel of output, of which I could obtain anything like a reliable account.

TABLE OF FRANKLIN COUNTY FOR 1893.

Office number	OPERATOR.	MINE.	POST OFFICE.	Number of days mine worked.....	Number of bushels mined	Estimated value of output.....	Average number of miners.....	Average number of day hands	Average number of all employes.....	Av. price pd. per bu. for unscreen'd coal, in cts.	Kind of opening — shaft, drift, or slope..	Has mine two surface openings?	Depth of shaft from surface, in feet.....
1	Ransom & Summs.....	Ransomville	Ransomville	240	150,000	\$12,000 00	20	8	28	6	Shaft..	Yes....	80
2	George Caple & Bros.....	Caple	"	200	14,000	1,120 00	4	1	5	7	Drift..	"	"
3	D. E. Price.....	Price.....	Williamsburg.....	205	13,940	1,115 20	4	1	5	7	"	"	"
4	Morris & McKissick.....	Allen	"	205	20,750	1,660 00	6	1	7	7	"	"	"
5	Wm. Ward.....	Lindsay	Quenemo.....	122	21,000	1,680 00	10	2	12	6	"	"	"
6	B. F. Alexander	Allen & Lindsay	Williamsburg.....	100	5,100	480 00	4	2	6	6	"	"	"
7	F. E. Dyer	Dyer No. 1.....	Pomona.....	210	86,500	6,920 00	15	3	18	5	"	"	"
8	"	Dyer No. 2†	"	150	40,500	3,240 00	12	2	14	6	Drift..	Yes....	"
9	B. F. Reridon.....	Grabendike.....	Pomona.....	120	29,150	2,332 00	9	1	10	6	"	"	"
10	W. E. Bray.....	Bagsly	Williamsburg.....	150	7,650	612 00	3	"	3	7	"	"	"
11	— Rusbatch.....	Rusbatch	"	150	17,000	1,360 00	5	1	6	7	"	"	"
12	Moore Bros.....	Moore.....	"	200	"	"	"	"	"	"	Shaft..	"	"
13	Paynter & Challand *	"	"	"	"	"	"	"	"	"	"	"	"
14	Wickham†.....	"	"	"	"	"	"	"	"	"	"	"	"
15	Cass†.....	"	"	"	"	"	"	"	"	"	"	"	"
	Strip banks.....	"	"	"	"	"	"	"	"	"	"	"	"
	Totals.....			1,902	145,700	11,656 00	93	22	35	"	"	"	"
	Averages.....			173	551,290	\$44,103 20	93	22	150	5.4	"	"	"

TABLE OF FRANKLIN COUNTY FOR 1893—CONCLUDED.

Office number	OPERATOR.	MINE.	POST OFFICE.	Average thickness of vein, in inches.....	System—room and pillar or long wall...	By what power operated?	By what power ventilated?.....	How many divisions of air in mine?	Has mine railroad connections?.....	Number of kegs of powder used in 1893..
1	Ransom & Simms.....	Ransomville	Ransomville	18	Long wall...	Horse..	Furnace...	4	Yes.....	40
2	George Caple & Bros.....	Caple	"	15	"	"	Natural...	1	No.....	"
3	D. E. Price.....	Price	Williamsburg..	15	"	"	"	1	"	"
4	Morris & McKissick	Allen	"	14	"	Man ..	"	1	"	"
5	Wm. Ward.....	Lindsay	Quenemo.....	14	"	"	"	1	"	"
6	B. F. Alexander	Allen & Lindsay	Williamsburg..	14	"	"	"	1	"	8
7	F. E. Dyer.....	Dyer No. 1	Pomona.....	15	"	"	Grate fire..	2	"	"
8	"	Dyer No. 2 †	"	"	"	"	"	"	"	"
9	B. F. Reridon	Grabendike	Pomona.....	14	Long wall...	Man ..	Natural...	1	No.....	2
10	W. E. Bray.....	Begsly	Williamsburg..	14	"	"	Grate fire..	2	"	"
11	— Rushatch	Rushatch	"	13	"	"	Natural...	1	"	"
12	Moore Bros.....	Moore	"	14	"	"	"	1	"	"
13	Paynter & Challand *	Paynter	"	"	"	"	"	"	"	"
14	Wickham †	Wickham †	"	"	"	"	"	"	"	"
15	Cass ‡	Cass ‡	"	"	"	"	"	"	"	"
	Strip banks.....	Strip banks.....	"	"	"	"	"	"	"	"
	Totals.....	Totals.....	Totals.....	14½	"	"	"	"	"	48
	Averages.....	Averages.....	Averages.....	14½	"	"	"	"	"	"

* Mine suspended operation in 1892.

† No report.

‡ Report included in mine No. 1.

§ One box of dynamite.

NOTE.—Bituminous coal in all mines.

In 1893, the miners of this county produced 405,590 bushels, exclusive of the strip-bank output, making an average per miner of 4,361 bushels yearly. As the table of the county shows 93 miners employed, averaging 173 days worked in the year, the average annual earning per miner is \$277.51, or $\$1.60\frac{4}{10}$ per day for time worked, or $88\frac{2}{10}$ cents for 312 working days in the year, making an average of 76 cents for every day in the year. The above statement shows the miner's gross earnings, making no deduction for the necessary mine expenses.

Record of Inspection.

The Ransom & Simms Coal Company's shaft is a horse power, located on the Burlington branch of the Atchison, Topeka & Santa Fé railroad, west of the Ransomville depot. Depth of shaft, 80 feet; size, 5 x 10 feet; airshaft is 6 x 8 feet; ventilation by furnace; air current divided into four sections; overcast on north side; average thickness of coal, 18 inches. Price paid for mining, 6 cents per bushel; selling price in winter, \$2.50 per ton at mine. The roadways in this mine were in a very fair condition; no escapement in the way of a stair; long-wall system. This mine has been in operation since 1886. An average of 40 men are employed in winter. On the occasion of my first visit, I found the air very dull, and some of the miners informed me they were very often compelled to go home through the day, on account of bad air, as those in charge very often neglected the furnace. This mine has no means of egress in case of fire at main shaft, which frequently occurs, particularly when located near a railroad over which several trains pass daily. On my return home, I sent the company the following notice:

Mr. James Simms, Superintendent Ransom Coal Company:

SIR—After a careful consideration of the location of your company's shaft, being located so near the railroad, which adds additional danger, not speaking of non-compliance on your company's part in reference to an escapement, I believe it is absolutely necessary to sink another shaft. I do not consider your furnace shaft an escapement; also, the necessary amount of air, viz., 100 cubic feet per man per minute, is not and cannot circulate at face, as the furnace is too far from face of workings, and not attended to. In conclusion, I consider the life of one miner, whose daily avocation necessarily compels him to work in such mines, worth all the mines and minerals in Franklin county. By not complying with my demands, which I now make, by having another shaft sunk as soon as possible, I call your attention to that part of the law which prescribes a fine of from \$100 to \$1,000. Hoping you will start immediately; otherwise I will enjoin your company.

A. C. GALLAGHER, *Inspector.*

Shortly after the shaft was located and sunk, and, in the way of improvements, chutes were built for coaling railroad locomotives and new bridle chains put on cages. I have no reports of accidents at this mine. Mr. Simms, the mine boss, is a practical miner, and diligently watches the working places, to see that they are properly timbered.

The "Caple Bank," as it is commonly called, is a leased mine on the

Ransom coal farm, situated one mile north of Ransomville, and operated by Geo. Caple & Bros. The mine is a drift, opening into a 15-inch vein of coal, worked on the long-wall plan; has two openings; ventilation, natural; has no railroad connection; employs an average of four men the year round; mine began operations in 1887; pays 7 cents per bushel for mining.

D. E. Price's drift mine, a lease of the Hardache place, is located one mile south of Williamsburg. Vein, 14 inches; has no railroad connection; only local trade; employs four men; has two openings; natural ventilation; system, long wall; pays 7 cents per bushel for mining.

H. Allen's drift mine is located three-fourths of a mile south of Williamsburg; leased by Wm. Morris and Charles McKissick; employs an average of about six men. Local trade. Price paid for mining, 7 cents per bushel. System, long wall; height of coal, 13 inches. There are three openings; natural ventilation. This mine was in fine condition when I visited it. They work very little in summer.

The Lindsay mine is located about five miles north of Williamsburg; is a drift mine, without railroad connection, and has been leased for five years to Wm. Ward, for 1 cent per bushel royalty. Drift is 350 feet long to face of workings. Natural ventilation, as there are several openings. Average thickness of coal, 14 inches. Miners are paid 6 cents a bushel for mining; selling price at pit, 8 cents per bushel. At the time of my visit, July 29, four men were employed, but in winter about a dozen men are given work. Roof good.

Benjamin F. Alexander operates a drift mine on land belonging to Messrs. Allen & Lindsay, $3\frac{1}{2}$ miles southwest of Williamsburg. The mine is known as the Allen & Lindsay mine. Average thickness of coal, 14 inches; has two openings, but natural ventilation; no railroad connection; depends on local trade; employs four men, and pays 6 cents per bushel for mining.

The Dyer drift mines, Nos. 1 and 2, are located three miles south of Pomona. System, long wall; thickness of vein, 15 inches; good roof. At the time of my visit, Mr. Dyer was making extensive preparations for winter trade. He pays $\frac{3}{4}$ -cent royalty per bushel. Both drift mines were in very fair condition; miners are paid 5 cents per bushel.

The Grabendike mine is a drift, located $3\frac{1}{2}$ miles southwest of Pomona, and is operated by B. F. Reridon on a lease from the Grabendike Land Company, on royalty of 1 cent per bushel. Coal is 14 inches thick, and worked on the long-wall system. There are two openings. Ventilation is natural; employs 12 men; has no railroad connection; local trade; pays 6 cents a bushel for mining; men push their coal out of the drift, which is over 300 feet in length.

The Bagsly drift mine is located five miles northeast of Williamsburg; is leased and operated by W. E. Bray, who pays 1 cent per bushel royalty. Two openings; ventilation by grate furnace; air in two divisions; depth of airshaft, 20 feet; size, 4 x 4 feet. Vein about 14 inches. Employs nine men and pays 6 cents per bushel. Only local trade.

The Rusbach drift mine is situated one-half mile west of Williamsburg. Thickness of coal, 13 inches. Operated on the long-wall plan. Only local trade. Two openings; natural ventilation. Employs three men, paying 7 cents per bushel for mining.

The Moore Bros.' drift mine is a lease on the Roberts farm, located three miles southwest of Williamsburg; employs five men, paying 7 cents a bushel for mining. Local trade. Two openings. Natural ventilation.

Paynter & Challand's shaft mine is located two miles south of Pomona. This mine was not in operation in 1893. Mr. Paynter is experimenting, and perfecting a long-wall mining machine, at the "Santa Fé" mines at Toluca, Ill., and intends operating the Paynter & Challand mine in the near future.

Wickham & Coss have opened two drift mines on the Morgan farm, near Hacket hill, northwest of Ottawa and northeast of Pomona. I did not inspect these mines, as they were idle when I was making my rounds.

LABETTE COUNTY.

Coal is bituminous. Thickness, about 15 inches, being about 10 feet from the surface. There are no shafts in the county, and I believe neither drift nor slope. The output for the year is very hard to determine, as there were so many employed and at such disconnected intervals. L. Baker operates some works $1\frac{1}{2}$ miles southeast of Oswego. Near him are J. Stice, operating on his own farm, A. Stice on his, and C. Pufferberger and G. Bickel, besides a dozen or two more, none of whom has kept a record of his work except Mr. Barker. To the best of my judgment, I should say there were about 100,000 bushels, or .139 per cent. of the entire output of the state, produced in the county last year, valued at \$9,000. Mr. Baker has the most extensive works in the county, and turned out 15,509 bushels, using 30 kegs of powder. At this proportion, there were about 210 kegs of powder burned. Number of men employed, 40. No coal is shipped, and the work is carried on chiefly in the winter, by farmers who own the land, and thus employ their time when not busy in their fields.

In December, 1893, a Mr. McKinstry went into the county prospecting, and I lately received a letter, of which the following is a portion:

Since I last wrote you, I have been prospecting on the farm of Mr. C. C. Kenisem, in this county, $3\frac{1}{2}$ miles south and one-half mile east of Dennis, for coal. At 93 feet from the surface I struck a $3\frac{1}{2}$ -foot vein, and in the same drill hole, at 98 feet, found a $4\frac{1}{2}$ -foot vein of "cannel" coal. There is no other coal nearer than Thayer, 15 miles away.

If the above is true, the find is a bonanza, and will materially increase the mineral wealth of the state, as there are only a very few small fields of this coal discovered in the United States. A good quality of cannel coal will sell at about three times the value of bituminous.

LEAVENWORTH COUNTY.

There are five shaft mines in Leavenworth county, averaging 721 feet in depth. The coal is a fair quality of bituminous; average thickness of vein, 20 inches. In 1893, four of these mines worked an average of $211\frac{3}{4}$ days, or $67\frac{3}{4}$ per cent. of working days in the year, producing 6,509,463 bushels, or 9.035 per cent. of state output. The estimated value of output, state mine included, is \$423,115.09. During the year, an average of 1,188 men were employed, 300 of whom were convicts.

The Brighton Coal Company's mine is not tabulated in my report, as I was unable to obtain the amount of coal, or the number of days worked. I wrote on several occasions, but received no answer; therefore, I cannot make a statistical report of the output. This mine suspended operations in July, 1893, and has not resumed operations since. I notified the superintendent on several occasions that an airshaft or escapement would have to be perfected; otherwise I would enforce the law relating to second openings. This may have been the cause of the company's refusal to furnish statistics relating to their production and the number of days worked. I considered it my duty to enforce this law, as the object and intent of our mining laws in this and all other states are for the health and safety of those employed. Reason must, therefore, convince any man who is conversant with mining in deep shafts that it is absolutely necessary to have an escapement in connection with the Brighton mine. Should the engine room or pit top take fire, it would almost be impossible to save those in the mine. The breaking of a hoisting rope, which frequently occurs in Leavenworth county, would also endanger miners and others employed, as the descending cage, in a case of this kind, is liable to tear out the partition which divides the upcast and downcast. Natural consequence would follow: Those employed at the face of working places, and in many other parts of the mine, would suffer or suffocate for want of air; and, in such deep shaft mines as are in Leavenworth, a certain amount of natural gas would be liable to accumulate, which might prove destructive to life and property. The company, no doubt, may have guarded against all dangers herein enumerated; nevertheless, I value the life of the most insignificant miner more than the cost of sinking an airshaft or escapement. It will be remembered that a few years ago the pit top and engine room at the Brighton mine burned to the ground. Fortunately for all concerned, it was in the evening or at night, when all employes were out of the mine. What would have been the result of this burning were it during working hours? Undoubtedly all the men in the mine would have perished of suffocation. The mining law has been a bone of contention in Leavenworth county for the past six or eight years. Complaints, on several occasions, have been made, even to the honorable speaker and members of the legislative body, when assembled in Topeka, demanding the enforcement of that part of the mining law relating to safety catches on all cages used in shafts 100 feet or over. However, after a protracted

struggle, by a resolute determination, I caused the Leavenworth County Home Mining Company and the state mine to comply. The Riverside mine No. 34, Kansas & Texas, has had safety appliances attached to their cages since they commenced operation.

This statement, no doubt, will be subject to a certain amount of criticism as to the valuation of the coal in Leavenworth county; also, the remarks relating to the Brighton mine, and the mention of safety catches. However, I deem it my duty to make a true statement, and present the facts in every instance, no matter whose displeasure I may incur. I made several inquiries as to the price of coal, and 7 cents per bushel is supposed to be the estimated value in Leavenworth county. The selling price of coal at the state mine I know very little about; but, in my judgment, it should not be put onto the market to undervalue the products of the free miner. The state mine, or Penitentiary shaft, has been the instigation of reducing the free miners' wages in Leavenworth and Osage counties, which can be clearly evidenced. How can the other operators pay their free miners a fair price when they have to compete in the same market with the products of an institution operated by convicts, who are paid at the rate of 3 cents per day? I will treat this subject more fully on another page. I feel justified in declaring that the Brighton Coal Company, or any other company in the state, should be restrained when they do not show a willingness to comply with the spirit of the law. I have been credibly informed that the superintendent of the Brighton mine claimed he would operate the mine as usual, with only one opening, as soon as my term of office expired. Mr. Brown, the superintendent, never told me so; but whatever coloring it may have, I sincerely

TABLE OF COAL MINES OF LEAVENWORTH COUNTY FOR 1893.

ITEM.	Leavenworth Coal Company's mine, Leavenworth.....	Kansas & Texas Coal Company, Riverside mine, No. 34, Leaven- worth.....	Home Mining Com- pany, Home mine, Leavenworth.....	State of Kansas, Lansing, or Peni- tentiary mine, Lansing.....	Total.....
Number of days mine worked.....	200	158	180	309	847
Number of bushels mined in 1893.....	2,096,870	1,458,625	1,429,320	1,524,048	6,509,463
Estimated value of output for 1893.....	\$136,296 55	\$94,810 62	\$92,944 80	\$99,063 12	\$423,115 09
Average number of miners.....	307	182	200	⁵ 300	989
Average number of day hands.....	84	40	52	⁶ 23	199
Average number of all employes.....	391	222	252	323	1,188
Average price paid per bushel ¹	³ 4	⁴ 3½	³ ½	⁷ 3	
Kind of opening—shaft, drift, or slope.....	Shaft.	Shaft.	Shaft.	Shaft.	
Has mine two surface openings?.....	Yes.	Yes.	Yes.	Yes.	
Depth of shaft from surface, in feet ²	710	730	712	732	
Kind of coal: Bituminous, all mines.....					
Average thickness of vein, in inches.....	20	20	20	20	
System.....	Long wall.	Long wall.	Long wall.	Long wall.	
By what power operated?.....	Steam.	Steam.	Steam.	Steam.	
By what power ventilated?.....	Fan.	Fan.	Fan.	Fan.	
How many divisions of air in mine?.....	4	4	4	4	
Has mine railroad connections?.....	Yes.	Yes.	Yes.	Yes.	
Number of kegs of powder used in 1893.....	300				

¹ Average, 3½ cents per bushel.² Average, 721 feet.³ Screened.⁴ Unscreened.⁵ Convicts⁶ Officers.⁷ Convicts are paid 3 cents per day.

trust that my successor, regardless of any political proclivity to any party or individual, will never consent to overlook the law in this case. I also hope that our legislators will give the miners of Leavenworth county more protection.

The Brighton Coal Company, Brighton mine, Harkness, suspended operations in July, 1893, and refused to furnish any report.

Record of Inspection.

The Leavenworth Coal Company's shaft mine is located at the southeast corner of the government reservation. Depth of shaft, 710 feet. The air-shaft or escapement in connection with this mine has a pair of first-class hoisting engines, in case of accident to the main shaft. This mine is operated on the long-wall system. A fan 25 feet in diameter surmounts the air-shaft, and furnishes ventilation. The mine has a capacity of 500 tons daily. This mine commenced operation in 1871, and, on the occasion of my last visit, employed 350 men. On the north side, an electric motor is in operation, and, by the aid of an endless rope, the coal is hauled a distance of 4,000 feet, and on the west side, 260 feet. A northeast entry has been driven a distance of 1,200 feet through old gob; and coal will be hauled by electric power over this entry from the face of workings in that quarter. To make the circuit of the mine along the working face, one must travel over five miles. Three mining machines, of the Sperry make, are operated by electricity, and are supposed to do the work of 120 men. All pumping is done by electric power, and the shaft bottom is lighted by electric lamps. Some of the entries in this mine are over one mile in length. Measurement of air at intake on north side, 14,000 feet per minute. Would not register at face of main north entry. This leakage was explained by the distance it had to travel, and by many of the cross entries, where they broke from main north, being supplied with curtains instead of having doors. These were never known to be air-tight. In consequence of this, the north side of the mine is very close and warm, and I found the roadways very dry and dusty. They are closely attended to, and watered at frequent intervals. This is necessary, as all the deep mines in Leavenworth county generate large quantities of gas. Fire bosses also examine the mine every morning, and, as proof of their visit, register day of the month at the face. Measurement of air on south side showed 8,200 cubic feet per minute. Total intake, 22,200 feet per minute. As a whole, this mine is in very fair condition. Miners are paid at the rate of \$1 per ton, after the coal has passed over a screen 12 feet long, with one inch space between the bars. A new cable line, 1,400 feet long, on a single track, has been put in on the north, with a grip car capable of hauling 20 pit cars to the bottom at a trip. After a long and tedious controversy, safety catches were put on the cages.

The Kansas & Texas No. 34, known as the Riverside mine, is located two miles south of Leavenworth city, on a switch of the Union Pacific rail-

way. Depth of shaft, 730 feet; size, 10 x 16; ventilation by fan 12 feet in diameter; upcast or airshaft is partitioned off, main shaft, which is 4 x 10 feet; long-wall system; air is divided into four separate currents; an overcast is constructed on west side. This mine commenced operations in 1887. Capacity of mine, 600 tons per day. Coal is weighed in mine, then dumped into a self-dumping hopper, which has been constructed under the cage. This has materially assisted in the increase of production. Miners are paid 80 cents per ton, mine run. There were 230 men employed when I visited this mine. Measurement of air at intake on east side, 8,520 cubic feet per minute; measurement at intake on west side, 7,100 feet per minute; a total of 15,620 cubic feet per minute, which I considered insufficient, taking into consideration the area of the mine and the number of employes. The return near upcast was in a bad condition, requiring to be properly timbered. The escapement or tunnel between this mine and the Home mine was in very good condition, excepting where it had taken a squeeze, which was being properly timbered. It must have been a regular custom at this mine to send timber down when miners are ascending on opposite cage. My first experience led me to believe such was the case, as the top hands put a load of props on cage at the lower landing when I was on the cage on my way to the top. I gave Mr. Braidwood strict orders to comply with that part of the law in the future, as I consider such a very dangerous practice. This mine, as a whole, was in a fair condition. However, I consider the present fan inadequate to supply the necessary amount of air.

The Home Mining Company's mine is located within the limits of Leavenworth city. Depth of the shaft is 712 feet; size, 9x12 feet. The upcast, or airshaft, is 4x9 feet, partitioned off one end of main shaft. A fan 20 feet in diameter furnishes the ventilation. The air is divided into four sections, with an overcast on east side. Thickness of coal, 20 inches. Long-wall system of operation. Measurement of air at intake on east side, 6,600 cubic feet per minute; at face of main east, 3,780 feet per minute; at intake on west side, 6,750 cubic feet per minute; at face of main west, 3,600 feet per minute. Many improvements have been made at this mine since my first visit: Main air course remodeled and well timbered; a first-class overcast made, and the air courses leading to it much shortened; and the escapement way, or tunnel, connecting with the Riverside mine put in good condition. I examined this tunnel on two occasions, and found it free of gas and water, and well timbered. About 175 men were employed, and paid at the rate of 80 cents per ton, mine run. After a good deal of strife, safety catches were put on cages. As a whole, this mine was in a very fair condition.

The State mine or Penitentiary shaft is located inside the walls of the Penitentiary, at Lansing, Leavenworth county. Depth of shaft, 732 feet; size, 10 x 16 feet; an airshaft or an escapement is in connection with main shaft; size of airshaft, 8 x 14 feet; has a pair of engines and cages, by which

considerable coal is hoisted; ventilation by fan 16 feet in diameter; an air current is divided into four sections or spiles; overcast on north side of shaft bottom. Distance between bottom of main shaft and airshaft, 200 feet; distance from bottom of main shaft to face of north, east and west main entries is about one-half mile; distance from bottom of shaft to face of south entry, 1,351 feet. The area or excavations of this mine are supposed to be more than 180 acres at present; long-wall system; average thickness of coal, 20 inches; slate roof, which is very fair, as a whole, all over the mine. The working places in this mine are examined every morning by fire bosses before employ  s enter their respective working places. The superintendent informed me that the air current was measured every morning, and a proper record kept of same. However, he failed to report such measurements to my office, which, according to the mining law, should be done once a month. On the occasion of my first visit, I learned that the law relating to safety catches was violated. Mr. Robert Lamm, who was then superintendent, claimed that "a good, strong rope was the best safety catch that could be applied." This may be true; but, in my judgment, the institutions of the state should be the first to comply with the laws as enacted; therefore, I notified the superintendent and warden to comply with that part of the law relating to safety catches on cages in Leavenworth county, which has been done. Mr. Lamm did not show any desire to evade any part of the law, and immediately proceeded to make the necessary preparations. In a short time he perfected his undertaking, putting a substantial safety appliance on cages at the escapement shaft. Mr. Bunn, the present superintendent, Mr. Lamm's successor, has made several improvements in the way of changing air courses and remodeling the same. At my last visit, in December, I inspected the escapement shaft and main shaft; both required new cribbing, particularly the escapement shaft. I reported the condition to the governor, and he promised me they should receive immediate attention. Mr. E. Simpson has succeeded Oscar Lamm as mine boss, and has devoted a great portion of his time in making improvements, particularly in ventilation. In 1893, this mine produced 1,524,048 bushels, and employed an average of 323 employ  s; estimated value of output, at 6½ cents per bushel, \$99,063.12. This may not be the price; however, I value it the same as the production of the other mines in the county.

Analysis of the Miners' Earnings in Leavenworth County for 1893.

In giving an estimate of miners' earnings in Leavenworth county, it would not be fair to include the State mine or the Leavenworth Coal Company's mine, as convicts produce all the coal mined at Lansing, or Penitentiary mine, and are employed every day, except Sundays and legal holidays, and the Leavenworth Coal Company use electric mining machines, by which a large portion of the output is mined. Therefore, an average of the Home

and Riverside mines is considered a fair basis upon which to compute the earnings of the Leavenworth county coal miner.

The Kansas & Texas Coal Company's Riverside mine No. 34 worked 158 days, employing an average of 182 miners, and producing 1,458,625 bushels of coal. *The Home Mining Company's mine worked 180 days, employing an average of 200 miners daily, and producing 1,429,920 bushels of coal for the year 1893. The Riverside mine worked 22 days less than the Home mine, and employed 18 less miners, yet the Riverside mine produced 28,705 bushels more coal than the Home mine.

The Riverside mine and Home mine both produced 2,888,545 bushels, and employed 382 miners. Both mines worked an average of 169 days. (See table.) This would be an output of $7,561\frac{5}{10}$ bushels, or 302 tons and 928 pounds for each miner for the year 1893; thus making a daily average of $44\frac{3}{4}$ bushels for each miner for the time employed. As the price paid for unscreened coal was $3\frac{1}{2}$ cents per bushel, or 80 cents per ton, the aggregate annual earnings of the Leavenworth county coal miner was \$241.97. To this we will add one-tenth of the miner's average annual earnings, which is \$24.19, to pay for work, such as room turning, brushing, etc., which is 8 cents per ton in excess of the mining price for every ton mined in the county. This does not include any other necessary expense to the company, except that paid the miner. One-tenth of \$241.97 equals \$24.19; making a gross earning of \$266.16.

The necessary expense must, therefore, be deducted from the gross earnings. For blacksmithing, the miner of Leavenworth county pays $1\frac{1}{2}$ cents per ton. As the average output per miner was 302 tons for 1893, therefore the cost for blacksmithing would be \$3.62. Lard oil costs 60 cents per gallon. A gallon of oil will last the miner for lighting purposes an average of 25 days. As the average number of days the mine worked was 169, the cost for oil would be \$4.20. This is not making an allowance for the time the miner worked when the shaft was not hoisting. The average annual cost to the miner for keeping mining tools in repair would be about \$2.50, making a total expense of \$10.32, which cannot be avoided. Thus leaving the miner \$255.84 for his yearly earnings, or \$21.32 for every month in the year, or $\$1.51\frac{2}{3}$ per day for an average of 169 days mine worked; 82 cents per day for the 312 working days of the year, or an average of 70 cents for the 365 days of the year.

We find that the average house rent paid by the miners of Leavenworth county is \$7.20 per month, or 24 cents per day, leaving the miner 46 cents per day, with which he is supposed to feed and clothe his family. Allowing four persons to each family in Leavenworth county—as in Cherokee, Crawford and Osage counties—and calculating at the rate of $2\frac{1}{2}$ cents each per meal, and three meals per day, we find that it would cost the miner 30 cents a day for food. This leaves the enormous sum of 16 cents, with which the miner has to buy fuel, clothing, boots and shoes, and the necessities

pertaining to a home. If the average miner of Kansas partakes of any of the luxuries of life, his family is deprived of the munificent allowance based upon his annual earnings.

The foregoing statement may be criticised by those who have not given the matter their careful attention and study. Nevertheless, the preceding figures, in the table of Leavenworth county, which were given by the mine operators, will bear out my statement for the year 1893 as being true.

TABLE SHOWING EARNINGS OF MINER IN LEAVENWORTH COUNTY FOR 1893.

Average number of days mine worked.....	169
Average number of bushels produced per miner in the county.....	7,561 $\frac{2}{3}$
Average price paid per bushel for unscreened coal.....	\$0 03 $\frac{1}{2}$
Average earnings per miner for the amount of coal produced.....	241 97
Adding one-tenth of the miner's earnings for room turning, brushing, etc.....	24 19
Miner's total earnings.....	\$266 16
MINER'S EXPENSES FOR TIME WORKED IN 1893.	
Blacksmithing.....	\$3 62
Lard oil.....	4 20
General repair of mining tools.....	2 50
Total expense.....	10 32
Balance, or net earnings due the miner.....	\$255 84
Average daily earning for the 169 days mine worked, less expense	\$1 51 $\frac{2}{3}$
Average daily earning for the 312 working days of the year.....	82
Average daily earning for the 365 days of the year.....	70
Average daily rent to miner in Leavenworth county, 24 cents, leaving.....	46
Calculating four persons to each family, at a cost of 2 $\frac{1}{2}$ cents each per meal, or 7 $\frac{1}{2}$ cents per diem, is 30 cents, leaving.....	16

LINCOLN COUNTY.

There are six mines in this county—five shaft and one slope, only four of which produced coal in 1893; output, 60,000 bushels, or .083 per cent. of entire output of the state; estimated value, \$7,800. My predecessor, in his published report, says of this county: "Number shaft mines, 8; total output for 1891, 169,200 bushels; estimated value, \$13,536." I visited this county, and cannot conceive where this amount of coal was produced. I received my figures from the operators' books. The miners of this county receive 9 cents per bushel for mining, as it is an inferior quality of lignite and very hard to mine. This price has been in vogue for years. My predecessor values the coal at 8 cents per bushel, or 1 cent less than the digging price, while I believe the coal belongs to the operator when the cost of mining is paid; therefore, I valued it at the selling price to the consumer, which is 13 cents per bushel, or \$3.25 per ton at the mine. I find that this rule applies to our reports all the way through. In addition to the six mines already mentioned, three mines are being opened on the Elkhorn river. All of these mines are operated by horse power, and have no railroad connections. All the coal is sold to local consumers. The coal is a very poor quality, yet it is considered a great blessing by the residents of the county, who were formerly compelled to haul their fuel a distance of 10 and sometimes 15 and 20 miles from the Union Pacific railway, and in winter paid as high as \$10 and \$12 per ton.

People who live there told me that the price of coal at the railway stations fell at once to \$5 per ton upon the discovery and production of this coal, poor as it is. It takes a fairly good miner to mine an average of 1,350 pounds of coal a day in this vein, which averages over the whole field about 15 inches. Some mines are worked on the long-wall system, some on the room and pillar, while some, combining both systems, work two or three rooms abreast, taking out intervening pillars as they go. In some places the mining is done in a band of clay about the middle of the vein; at others the mining is in the bottom coal. No powder is used, but all coal is loosened with the wedge. Average number of employés, 30. The floor or bottom is a smooth, solid rock, and the miner pushes his car upon this. No tracks are laid in the mine. Most of the owners and miners are either Swedes or Danes, and came into the county as home takers on government land. They appear to be a very industrious class of people, but are in a poor condition. Many live in dugouts, the earthen floor serving as a bedstead, with but very few bed clothes. Farmers, in many instances, haul this coal 15 miles, and claim to save considerable money by so doing, as bituminous coal sold at railway points last fall at an average price of \$7 per ton.

Record of Inspection.

A. F. Buseman has a shaft mine, 50 feet deep and 5x8 feet in size, located two miles south of Denmark. System, room and pillar. The coal is about 18 inches thick, and, as there is no intention of putting mules in the mine, the entries are not over three feet high. This shaft was sunk in 1889, but has no airshaft as yet. At the time of my visit, they had drilled a two-inch hole from the surface, coming down at face of the main entry, and were about to place a pair of ordinary bellows, attached to a windmill, over the same, for the purpose of ventilating the mine. I ordered an airshaft sunk, or I would be compelled to close the shaft down on account of bad air. From four to eight men are employed in this mine, who are paid \$2.25 a ton for mining. Coal sells at pit head for \$3.25 per ton. The bottom is a smooth, hard rock, and no track is laid in the mine, but cars are pushed along on the stone. These cars hold about 250 pounds of coal, and each man pushes his coal to the bottom, and cages it. Michael Corcoran has this mine leased, on royalty of 1 cent per bushel.

The T. B. Alley shaft mine is located at Allamead, seven miles north of Denmark, on Spillman creek. Depth of shaft, 60 feet; average thickness of coal, 14 inches. In this mine the mining is done in a thin clay band in the middle of the vein. From 12 to 16 miners are employed, varying at seasons of the year. Natural ventilation; air pretty good. Mining price, \$2.50 per ton; coal sells at pit head for \$3.25 to \$3.50 per ton.

The Peter Brooks mine is a slope, situated on Spillman creek, two miles north of Pottersburg. Coal is about 18 inches thick. This is a new slope, and but very little coal has been taken out. All work done so far has been for the purpose of getting the mine in good shape for future operations.

The Little Timber mine, operated by L. P. Nelson, is situated $2\frac{1}{2}$ miles north of Denmark. A shaft mine, 46 feet deep, opening a vein of 22 inches in thickness. Mining is mostly done in middle of vein. No regular system is employed. Floor of solid rock, and no track in mine; rock roof. Mine began operation in 1890; started out on the single-entry system. No separate airshaft, but an upcast has been partitioned off end of the main shaft. Mining price, \$2.25, delivered on cage at bottom of shaft; selling price, \$3.25. I condemned both cages and ropes, forbidding the miners to ride up or down on same until necessary changes were made. Mr. Nelson, who appears to be a very sensible and fair-minded man, made the improvements at once. Entry is brushed to a height of $3\frac{1}{2}$ feet. From 6 to 8 miners are employed, who work only in winter.

The Nigger Creek, or Spiers mine, is $3\frac{1}{2}$ miles north of Pottersburg; a horse-power mine, employing three to four men; system, long wall. Miners receive \$2.25 per ton for mining; coal sells at \$3.25 and \$3.50. Natural ventilation; air very good.

The Nelson mine, operated by Andrew Nelson, is located two miles north and one-half mile west of Vesper. It is a shaft mine, 45 feet deep. This is a new shaft, only just down to the coal, and all work has been in the nature of development. The coal is 22 inches thick.

LINN COUNTY.

There are 12 mines in this county, which worked an average of 127 days in 1893. Average depth of coal from surface, 65 feet; average thickness of vein, 2 feet 10 inches; number of employés, 264, of whom 20 worked in strip mines; total output for the county, 1,852,119 bushels, or 2.571 per cent. of the product of the state; estimated value, \$92,605.95.

About all the known systems of workings are pursued in Linn county. One or two mines, working by single entry and room and pillar, occasionally driving two or three rooms abreast, thus being partially long wall; while others, again, work by long wall alone. At the Bradley & Vernon mine is the only face track in the state, and it is claimed to give first-class satisfaction.

TABLE OF COAL MINES OF LINN COUNTY FOR 1893.

Office number.....	OPERATOR.	MINE.	POST OFFICE.	Number of days mine worked.....	Number of bushels mined.....	Estimated value of output.....	Average number of miners.....	Average number of day hands.....	Average number of all employes.....	Average price paid per ton.....	Kind of opening — shaft, drift, or slope...	Has mine two surface openings?.....	Depth of shaft from surface, in feet.....
1	Mine Creek Coal Company.....	No. 1, Fleming.....	Pleasanton.....	210	991,425	\$49,571 30	80	14	94	\$0 93½	Shaft...	Yes..	90
2	Wm. J. Thirlwell.....	Pleasanton.....	"	127	79,690	3,984 50	24	9	33	88½	"	"	85
3	A. F. Seright.....	Seright.....	"	80	12,500	625 00	3	2	5	87½	"	"	55
4	Barker Bros.....	Barker.....	"	92	30,000	1,500 00	8	2	10	87½	"	"	.....
5	Lloyd Connors.....	Connors.....	"	50	5,500	275 00	2	1	3	87½	Slope...	"	.....
6	Bradley & Vernon Coal Company.....	No. 1, Boicourt.....	"	247	471,831	23,591 55	50	14	64	93½	Shaft...	"	95
7	T. W. Gage.....	Gage.....	Orehard.....	100	42,519	2,125 95	7	1	8	87	"	"	55
8	Ben. Goode.....	Goode.....	"	150	45,000	2,250 00	5	2	7	87	"	"	48
9	W. L. Chambers.....	Vantyle.....	La Cygne.....	130	12,069	603 45	3	1	4	87	"	"	50
10	Ben. Cooper.....	Sink.....	Orehard.....	150	20,800	1,040 00	4	1	5	87	"	"	87
11	Clyde Vincent.....	Vincent.....	Pleasanton.....	80	6,000	300 00	2	1	3	87	"	No...	20
12	James Sparks.....	State Line.....	Worland, Mo.....	108	32,784	1,639 20	7	1	8	80	Slope...	Yes..	.....
	Strip banks.....				102,000	5,100 00			20				
	Totals.....			1,324	1,852,119	\$92,605 95	195	49	264	\$0 87½			65
	Averages.....			127									

*1126 West Twelfth street, Kansas City, Mo.

TABLE OF COAL MINES OF LINN COUNTY FOR 1893.—CONCLUDED.

Office number.....	OPERATOR.	MINE.	POST OFFICE.	Average thickness of vein, in inches.....	System—room and pillar or long wall....	By what power operated.....	By what power ventilated.....	How many divisions of air in mine.....	Has mine railroad connections.....	Number of kegs of powder used in 1893..
1	Mine Creek Coal Company.....	No. 1, Fleming.....	Pleasanton.....	32	Long wall.....	Steam.....	Furnace.....	4	Yes.....	.....
2	W. J. Thirlwell.....	Pleasanton ..	" ..	28	" ..	" ..	Fan.....	2	" ..	.....
3	A. F. Seright.....	Seright.....	" ..	32	" ..	" ..	Natural.....	1	No.....	80
4	Barker Bros.....	Barker.....	" ..	30	Room and pillar..	" ..	" ..	1	" ..	14
5	Lloyd Connors.....	Connors.....	" ..	30	" ..	" ..	" ..	1	" ..	.....
6	Bradley & Vernon Coal Company ..	No. 1, Boicourt ..	* ..	33	Long wall.....	Steam.....	Fan.....	2	Yes.....	600
7	T. W. Gage.....	Gage.....	Orchard.....	40	Room and pillar..	Horse.....	Grate fire..	2	No.....	100
8	Ben. Goode.....	Goode.....	" ..	41	" ..	" ..	" ..	2	" ..	105
9	W. L. Chambers.....	Vantyle.....	" ..	39	" ..	" ..	" ..	1	" ..	31
10	Ben. Cooper.....	Sink.....	Orchard.....	40	" ..	" ..	" ..	1	" ..	70
11	Clyde Vincent.....	Vincent.....	Pleasanton ..	32	" ..	" ..	" ..	1	" ..	27
12	James Sparks.....	State Line.....	Worldand, Mo..	.....	" ..	" ..	" ..	1	Yes.....	80
	Strip banks.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Totals.....	.....	.....	.....	.....	.....	.....	.....	.....	1,107
	Averages.....	.....	.....	34	.....	.....	.....	.....	.....	.....

*1126 West Twelfth street, Kansas City, Mo.

†Partial room and pillar.

NOTE.—All coal bituminous.

Abandoned mines: Warren & Lacey, Sam. Keadie, and — Stephenson.

It is utterly impossible to give an analysis of the miners' earnings in Linn county, as some operators pay for screened and some for unscreened coal; some use powder, and others do not. The system of operation materially differs. As I could not obtain the per cent. of slack or nut where coal is screened before weighing, I can give no correct synopsis.

Record of Inspection.

The Mine Creek Coal Company's mine No. 1 is situated about two miles east of Pleasanton, on the Missouri Pacific railway. The mine is a steam shaft, of 40 horse power, with a depth of 90 feet, and coal of 2 feet 8 inches thickness. Ventilation is by means of a furnace, and air is divided into four sections, with overcast on north side; airshaft is partitioned off one end of main shaft, 9 x 6 feet in size. Ladders are now hung in this, and thus an escapement made. There is as yet no second opening. Measurement of air showed, at intake on the south side, 8,300 cubic feet per minute; north side, 7,650; air current along the face, good; system, long wall.

The Pleasanton Coal Company's shaft is on the Kansas City, Fort Scott & Memphis railroad, one mile north of Pleasanton. Hoisting is done by steam. Shaft is 85 feet in depth, and 6 x 12 feet in size. Long-wall system of operation, in a vein 28 inches thick. Shaft has been in operation since 1885. Ventilation by a fan 6 feet in diameter. Measurement of air at intake, 7,100 cubic feet per minute, traveling in a single current around the face of the workings. The roadways are in a fair condition, but the mine itself is in a very bad condition. When Mr. Thirlwell took hold of it, a man could not even stand in safety at the shaft bottom. His predecessor apparently did not know how to make a mine fit to work in, even had he possessed the inclination. Mr. Humphrey, the superintendent, owns the land on which the mine is located, and being also connected with the company, and knowing nothing about practical mining, refuses to allow any work being done, but his plan has been and is to make no expense. As a consequence, the mine was fairly at a standstill when I first visited it. The bottom of the escapement way had caved in, and there was no means of exit, except up the hoisting shaft. Since then a pretty good stairway has been put in, and the manway well cleared out, and over 500 feet of the main east entry brushed high enough for the passage of a mule. Twenty-three men were at work on the occasion of my visit, and among this small band two men have been injured by falls of slate. The men are paid 87½ cents per ton in summer, and 90 cents in winter. Mr. Thirlwell has leased the shaft, and is putting it in good shape.

A. F. Seright's mine is a shaft, situated about 2½ miles east of Pleasanton. The mine has no railroad connection, and is operated by horse power for a purely local trade. Thickness of coal, 2 feet 8 inches. This is a small property, having only four acres of coal land. Depth of shaft, 55 feet; size, 4 x 8 feet. There is neither furnace nor airshaft; ventilation is by natural means. New hoisting ropes were put on the gin early in the fall.

The Sam. Barker mine is a shaft mine, located $2\frac{3}{4}$ miles east of Pleasanton. Having no railroad connection, the trade is purely local, and does but little in the summer. This shaft was abandoned last fall, and a new shaft is being sunk with the intention of using the old one for an escapement.

The Connors drift mine, situated two miles east of Pleasanton, is without railroad connection, and depends upon local trade. Mine suspended operations in the fall.

The Bradley & Vernon Coal Company have a shaft mine situated one-half mile south of Boicourt, on the Kansas City, Fort Scott & Memphis railroad. This shaft is 95 feet in depth, 6x12 feet in size; air shaft is 95 feet in depth and 6x10 feet in size, surmounted by a fan 12 feet in diameter. Measurements of air showed, at intake on east side, 5,328, and on west side, 1,920 cubic feet per minute. On my second visit, I found the company was changing their plan of operation from room-and-pillar to the long-wall system, and had laid their track along the working face—the only one in the state. The roadways were very wet and muddy. I found the aircourses near the bottom of downcast had been given no attention whatever, and they were almost closed up with fallen roof; but indeed it would not have been of much benefit if they had been cleaned, as there were no ladders in the escapement. This mine has chutes on a high trestle running out to the railroad track, for the purpose of coaling engines, and this of itself renders the mine peculiarly liable to accident by fire, and calls for the greatest care in keeping the escapement in good order. In the condition I found the airways and escapement, a fire at the pit head would mean certain death to every man in the mine. I gave notice at once for these faults to be remedied, and a promise was made to have it done. Preparations are being made to introduce two of the Edison electric mining machines. Of the improvements made last year, I notice a new $1\frac{1}{4}$ -inch steel rope for hoisting, two 80-horse-power tubular boilers, one 80-horse-power dynamo, and one 100-horse-power high-speed engine to operate the dynamo.

T. W. Gage has a shaft located one mile east of Orchard post office, but not connected with any railroad. Depth of shaft, 55 feet; size, 6x8 feet; shaft is in very bad condition, as it needs new timbers and remodeling from top to bottom, having been sunk by inexperienced men. This mine works only in winter; operated by horse power.

Ben. Goode's shaft mine is a horse power, located eight miles east of La Cygne and one mile east of Orchard post office. Depth of shaft, 48 feet; system, room and pillar; main shaft and cages in bad condition. I ordered shaft remodeled and an airshaft sunk, as the old airshaft caved in. In the way of improvements, main shaft has been curbed and an airshaft sunk, new gin and cages put in, which were very necessary, as a man was not safe to ride up or down. Mr. Goode and sons mine coal in winter and farm in summer, having but very little respect for the mining laws. However, I was determined they should make the necessary improvements before re-

suming operations again, which no doubt they have, and should receive credit.

The Orchard, or Vantyle mine, as it is sometimes called, lies six miles east of La Cygne, Kas., and three miles west of Amsterdam, Mo. The mine is a shaft mine, operated by horse power; is 51 feet deep, 6 x 12 feet in size. There is no regular system of working.

The Sink mine, as it is commonly called, lies just within the Kansas line, four miles west of Amsterdam, Mo. It is a shaft mine, operated by horse power; is 87 feet deep; size, 6 x 10 feet; system, room and pillar. There was no second opening when first visited, but an airshaft has since been sunk. Natural ventilation.

Clyde Vincent is operating what is generally known as the Vincent mine, a horse-power shaft, with no railroad connections, and depending entirely upon local or farm trade. This mine is located about two miles east of Pleasanton, Kas. Natural ventilation. Depth of shaft, 20 feet.

James Sparks's slope mine is a horse power, located two miles west of Worland, Mo., and near the state line. Miners push their coal at this mine, and are paid 6½ cents per ton extra. In 1893, this mine worked 109 days. Miners are paid 80 cents per ton. I did not inspect this mine, as it was idle when I was making my regular round; however, I have had no complaints as to its condition.

LYON COUNTY.

I visited Lyon county on two occasions, seeking to find where the 87,343 bushels which my predecessor reported had been produced. I visited Admire City, where he stated some mines were opening up. They must have been of short duration, as I failed to find any, nor could I hear of any in the county. I wrote to several business men, making inquiries, but could obtain no information of any coal. Below is a copy of a letter from the railroad station agent at Admire City.

Mr. A. C. Gallagher, Inspector:

ADMIRE CITY, September 16, 1893.

No, sir; no mining being done at this place, and know of no mining in Lyon county.

Respectfully, E. A. WEEK, Agent.

Owing to those facts, I can make no report of Lyon county.

MITCHELL COUNTY.

I visited this county in December of last year to inspect the "drifts" which my predecessor complained of as needing ventilation and timbering. In his report, he credits Mitchell county with producing 26,000 bushels, valued at \$1,950, employing 20 men, and giving Saltville as the post-office address of the mine operators. I visited Saltville and made inquiries, but could hear of no mines. I then wrote to several post offices in the county, and here submit the replies I received:

BELOIT, KAS., March 10, 1894.

Mr. A. C. Gallagher, State Inspector of Coal Mines:

DEAR SIR—Yours received. In regard to coal mines in this county, there are none. I wish we had some. Your predecessor is off in his report.

Yours respectfully, GEO. H. McKINNIE.

Mr. McKinnie is the representative of Mitchell county. Also received one from the postmaster at Saltville, saying there was no coal mined there. Owing to the circumstance of no coal being produced there, I find it impossible to make any report for Mitchell county.

NEMAHA COUNTY.

My predecessor gives quite a lengthy report of this county, claiming an output of 55,200 bushels for 1890, and 57,000 bushels for 1891, valued at \$6,072 and \$6,270, respectively; the number of employés, 30 men; number of shafts in operation, 2. I visited this county, and repairing to the town of Bern, where he located these mines, I found none—only abandoned prospect holes. Failing in my search, I wrote to several parties in the county, and here give their replies:

A. C. Gallagher:

WOODLAWN, KAS., March 2, 1894.

DEAR SIR—I know of no coal mines in operation in Nemaha county.

Respectfully yours, R. D. McCLIMAN.

Mr. McCliman is the representative of that county, and has resided there for years.

A. C. Gallagher:

BERN, KAS., March 3, 1894.

DEAR SIR—In answer to your letter of inquiry regarding coal mining in this vicinity, will say, there is no coal mined here.

Respectfully,

W. J. McLAUGHLIN.

Mr. McLaughlin is postmaster at Bern, and editor of the *Bern Press*. It is very peculiar that the coal industry has been carried to this extent and the public men of the county know nothing of it; but such being the case, I can make no returns for this county.

OSAGE COUNTY.

The 54 mines of this county produce a very fair quality of bituminous coal. In 1893, mines worked a total of 7,287 days, an average of $134\frac{3}{4}$ days to the mine, or 43 per cent. of the working days of the year, producing 6,308,262 bushels. In addition to this, a few of the small drifts and strip banks produced 710,680 bushels, making a total of 7,018,942 bushels, or 9.742 per cent. of the output of the state, at an estimated value of \$529,899.68. Number of miners employed, 1,558; number of day hands, including strip-bank men, 415, making a total of 1,973 employés; average price paid for mining through the year, $5\frac{1}{2}$ cents per bushel.

Of the 54 mines, 49 are shafts, 6 are drifts, and 1 slope; average depth of shafts, 53 feet $4\frac{1}{2}$ inches; average thickness of coal, $16\frac{1}{2}$ inches. The power used to operate these mines is divided as follows: One is operated by

steam, 49 are operated by horse power; at four of the drifts the miners push the coal to dumping place. Number of mines ventilated by furnace, 18; by grate fire, 28; and by natural ventilation, 8. Number of mines with 4 divisions of air, 7; with 3 divisions of air, 4; with 2 divisions of air, 11; and with but 1 current of air, 32. Thirty of the mines in this county have direct railroad connections, and 24 have no railroad connection. All of the mines in this county except three have two surface openings. Only 109 kegs of powder were used in Osage county in 1893.

It costs the company \$6 for room turning in Osage and Peterton; \$5 in Burlingame and Scranton. As a general rule, the miner is supposed to make his roadway at least three feet in height, for which he receives no compensation, except for the first 15 feet when turning or opening up a new room. The miners pay the company 1 per cent. of their earnings for sharpening their mining tools. As a rule, the miners of Osage and Peterton push their coal to the bottom and cage it. In Burlingame and Scranton, the operators retain a certain per cent. of the miner's earnings on pay day, each miner paying a proportionate share per ton for having his coal hauled to the bottom. So the coal production of Osage county costs the operators very little in excess of the price paid for mining, no regular day hands being employed except mine boss and weigh boss. If the miner has occasion to do any dead work, he is remunerated by having his turn made up for all the loss sustained. A standard weight of 800 pounds per car is established, and any overweight goes to the company.

TABLE OF COAL MINES OF OSAGE COUNTY FOR 1893.

Office number.....	OPERATOR.	MINE.	POST OFFICE.	Number of days mine worked.....	Number of bushels mined.....	Estimated value of output.....	Average number of miners.....	Average number of day hands.....	Average number of all employes.....	Av. price pd. per bu. for unscreen'd coal, in cts.	Kind of opening—shaft, drift, or slope..	Has mine two surface openings?.....	Depth of shaft from surface, in feet.....
1	Carbon Coal Company.....	No. 9, Peterton.....	Osage City	196	246,570	\$19,725 60	41	8	49	6	Shaft.....	Yes..	50
2	“ “ “ “.....	No. 10, Scranton.....	“	103	282,200	19,754 00	78	16	94	4 3/4	“	“	60
3	“ “ “ “.....	No. 12, “ “.....	“	103	356,175	24,932 25	100	25	125	4 3/8	“	“	30
4	“ “ “ “.....	No. 20, Osage City.....	“	147	230,258	18,420 64	44	9	53	6	“	“	23
5	“ “ “ “.....	No. 22, “ “.....	“	136	278,757	22,300 56	60	8	68	6	“	“	37
6	“ “ “ “.....	No. 23, “ “.....	“	120	246,570	18,725 60	90	9	99	6	“	“	36
7	“ “ “ “.....	No. 24, “ “.....	“	145	400,410	32,052 80	82	11	98	6	“	“	38
8	“ “ “ “.....	No. 25, “ “.....	“	150	244,445	19,555 60	49	8	57	6	“	“	26
9	“ “ “ “.....	No. 26, Peterton.....	“	90	110,825	8,866 00	38	6	43	6	“	“	22
10	“ “ “ “.....	No. 27, Osage City.....	“	135	238,308	19,064 64	57	6	64	6	“	“	36
11	Western Fuel Company.....	No. 2, “ “.....	“	149	175,950	14,076 00	53	2	55	6	“	“	30
12	“ “ “ “.....	No. 5, “ “.....	“	105	159,991	12,799 28	44	2	46	6	“	“	30
13	“ “ “ “.....	No. 6, “ “.....	“	134	216,877	17,350 16	50	2	52	6	“	“	59
14	Enterprise Coal Company.....	Oklahoma.....	“	152	267,500	21,400 00	58	4	62	6	“	“	34
15	Black Diamond Coal and Mining Company.....	Hershey.....	“	157	10,196	815 68	51	2	53	6	“	“	35
16	Pittsburg Coal and Mining Company.....	No. 4.....	“	150	48,000	3,840 00	16	2	18	6	“	“	45
17	“ “ “ “.....	No. 5.....	“	66	4,000	3,820 00	3	1	4	6	“	“	43
18	Swedish Coal Company.....	Rosenquist.....	“	200	162,500	13,000 00	36	2	38	6	“	“	30
19	Mathew Waddell.....	Waddell.....	“	150	52,173	4,173 84	15	2	17	7 3/4	“	“	77
20	A. W. Granstrom.....	Granstrom.....	“	160	39,840	3,187 20	17	2	19	6	“	“	35
21	Johnson & Anderson.....	Johnson.....	“	60	19,500	1,560 00	13	2	15	6	“	“	65
22	Lundquist & Olson.....	Lundquist.....	“	125	20,000	1,600 00	20	2	22	6	Slope.....	“	“
23	Sundflower Coal Company.....	Sundflower.....	“	151	42,320	3,385 60	14	2	16	6	“	“	35
24	Ryan & Whalen.....	Whalen.....	“	108	30,595	2,447 60	14	2	16	6	Drift.....	“	“
25	Scandinavian Coal Company.....	No. 6, Peterton.....	“	160	197,250	15,780 00	40	7	47	6	Shaft.....	“	40
26	Coughlin Bros.....	Coughlin.....	Peterson	60	33,600	2,688 00	28	2	30	6	“	“	31
27	Richard Underwood.....	Underwood.....	Burlingame	190	5,567	2,445 36	3	1	4	5	“	No..	105
28	Zucca Coal Company.....	Zucca.....	“	180	56,180	3,932 60	21	2	23	5	“	Yes..	80
29	Gus. Hopkins.....	Hopkins.....	“	180	7,000	2,490 00	2	1	3	5	“	“	10
30	Burlingame Coal Company.....	No. 1.....	“	128	30,766	2,153 62	9	5	14	5	“	“	85
31	“ “ “ “.....	No. 4.....	“	184	136,096	9,526 72	24	4	28	5	“	“	84
32	Thomas Whitcomb.....	Alliance.....	“	150	35,000	2,450 00	7	1	8	5	“	No..	101
33	John D. Jack.....	Jack.....	“	192	50,325	3,522 75	12	3	15	5	“	Yes..	85
34	Central Coal and Mining Company.....	Central.....	“	156	29,700	2,079 00	12	3	15	5	“	“	80
35	Burkville Coal and Mining Company.....	Burkville.....	“	58	9,280	649 60	8	1	9	5	“	“	78
36	Water & Slater.....	Champion.....	“	35	3,500	246 00	5	1	7	5	“	“	30
37	Turner Bros.....	Turner.....	“	150	37,000	2,590 00	11	2	13	5	“	“	40
38	Wm. Foster.....	Foster.....	“	150	90,000	6,300 00	20	2	22	5	“	“	103

TABLE OF COAL MINES OF OSAGE COUNTY FOR 1893 — CONTINUED.

Office number	OPERATOR.	MINE.	POST OFFICE.	Number of days mine worked.....	Number of bushels mined	Estimated value of output.....	Average number of miners.....	Average number of day hands	Average number of all employes.....	Av. price pd. per bu. for unscreen'd coal, in cts.	Kind of opening — shaft, drift, or slope..	Has mine two surface openings?	Depth of shaft from surface, in feet.....
39	Sturmen Bros.....	Fair Ground.....	Burlingame.....	100	81,481	\$5,703 67	15	5	20	5 1/2	Shaft.....	Yes..	80
40	Bellville Coal and Mining Company.....	Bell.....	Seranton	188	321,350	22,494 50	51	9	60	4	“	“	100
41	James Ingham.....	Ingham.....	“	200	165,000	11,550 00	20	7	37	5	“	“	70
42	Patrick Ryan.....	Ryan.....	“	190	227,300	15,911 00	40	5	45	5	“	No..	40
43	Thomas Martin.....	Martin.....	“	50	12,500	875 00	10	2	12	5	“	“	92
44	Thomas Chappell.....	No. 1.....	“	108	185,103	12,957 21	34	5	39	4	“	Yes..	60
45	“	No. 2.....	“	126	203,306	14,231 42	39	5	44	4	“	“	65
46	Harry Isaac.....	No. 4.....	“	125	79,575	5,570 25	16	6	22	4	“	“	30
47	“	No. 5.....	“	167	213,525	14,946 75	31	6	37	5	“	“	70
48	“	No. 6.....	“	114	105,725	7,400 75	17	3	20	4	“	“	48
49	Williamson & Gates.....	Williamson.....	“	38	5,000	350 00	6	1	7	4	Drift.....	“	“
50	Wm. H. Thomas.....	Excelsior.....	Carbondale.....	170	61,573	4,310 11	13	3	16	5	Shaft.....	“	26
51	Rutter & Stevens.....	Stevens.....	“	80	8,000	560 00	4	1	5	5	Drift.....	No..	“
52	N. D. Mathews.....	Mathews.....	Quenemo.....	57	13,600	952 00	12	1	13	6 1/2	“	Yes..	“
53	Rees Lewis.....	Lewis.....	Arvonnia.....	200	16,000	1,280 00	4	1	5	7	“	“	“
54	J. W. Jereny.....	Jereny.....	“	200	4,000	1,320 00	1	.....	1	7	“	“	“
	Totals.....			7,278	6,308,262	\$476,598 68	1,558	231	1,789	.....			
	Small drift and strip banks.....				710,680	53,301 00			184	.....			
	Recapitulation.....				7,018,942	\$529,899 68			1,973	.....			
	Averages.....			134 1/2						5 1/2			53 1/2

TABLE OF COAL MINES OF OSAGE COUNTY FOR 1893—CONTINUED.

Office number.....	OPERATOR.	MINE.	POST OFFICE.	Average thickness of vein, in inches.....	System—room and pillar or long wall.....	By what power operated?.....	By what power ventilated?.....	How many divisions of air in mine?.....	Has mine railroad connections?.....	Number of kegs of powder used in 1893..
1	Carbon Coal Company.	No. 9, Peterton.....	Osage City.....	27	Long wall.....	Horse.....	Furnace.....	4	Yes.....	3
2	"	No. 10, Scranton.....	"	31	"	"	"	4	"	"
3	"	"	"	31	"	"	"	4	"	"
4	"	No. 12, ".....	"	27	"	"	"	1	"	3
5	"	No. 20, Osage City.....	"	27	"	"	"	3	"	4
6	"	No. 22, ".....	"	27	"	"	"	3	"	4
7	"	No. 23, ".....	"	27	"	"	"	4	"	7
8	"	No. 24, ".....	"	27	"	"	"	4	"	3
9	"	No. 25, ".....	"	27	"	"	"	4	"	3
10	"	No. 26, Peterton.....	"	27	"	"	"	4	"	3
11	Western Fuel Company.....	No. 27, Osage City.....	"	27	"	"	"	4	"	"
12	"	No. 2, ".....	"	27	"	"	"	2	"	"
13	"	No. 5, ".....	"	27	"	"	"	2	"	"
14	"	No. 6, ".....	"	27	"	"	"	1	"	"
15	Enterprise Coal Company.....	Oklahoma.....	"	27	"	"	"	2	"	"
16	Black Diamond Coal and Mining Company.....	Hershey.....	"	27	"	"	"	2	"	"
17	Pittsburg Coal and Mining Company.....	No. 4.....	"	27	"	"	"	3	"	"
18	"	No. 5.....	"	27	"	"	"	1	No.....	"
19	Swedish Coal Company.....	Rosenquist.....	"	26	"	"	Natural.....	1	"	"
20	Mathaw Waddell.....	Waddell.....	"	28	"	"	Grate fire.....	1	"	"
21	A. W. Granstrom.....	Granstrom.....	"	26	"	"	"	1	"	"
22	Johnson & Anderson.....	Johnson.....	"	28	"	"	Grate fire.....	1	"	"
23	Lundquist & Olson.....	Lundquist.....	"	27	"	"	"	1	"	"
24	Sunflower Coal Company.....	Sunflower.....	"	26	"	"	"	2	"	"
25	Ryan & Whalen.....	Whalen.....	"	28	"	Man.....	"	1	"	"
26	Scandinavian Coal Company.....	No. 6, Peterton.....	"	28	"	Horse.....	"	2	Yes.....	"
27	Coughlin Bros.....	Coughlin.....	Peterton.....	29	"	"	"	1	No.....	"
28	Richard Underwood.....	Underwood.....	Burlingame.....	30	"	"	"	1	"	"
29	Zucca Coal Company.....	Zucca.....	"	29	"	"	"	1	Yes.....	"
30	Gas. Hopkins.....	Hopkins.....	"	30	"	"	Natural.....	3	"	18
31	Burlingame Coal Company.....	No. 1.....	"	30	"	"	Grate fire.....	1	Yes.....	28
32	Thomas Whitcomb.....	No. 4.....	"	31	"	"	"	1	No.....	"
33	John D. Jack.....	Alliance.....	"	30	"	"	Natural.....	1	"	"
34	Central Coal and Mining Company.....	Jack.....	"	30	"	"	Grate fire.....	1	"	15
35	Burkville Coal and Mining Company.....	Central.....	"	30	"	"	"	1	"	"
36	Water & Slater.....	Burkville.....	"	30	"	"	"	1	"	"
37	Turner Bros.....	Champion.....	"	29	"	"	"	1	"	"
38	Wm. Foster.....	Turner.....	"	31	"	"	"	2	Yes.....	"

TABLE OF COAL MINES OF OSAGE COUNTY FOR 1893—CONCLUDED.

OPERATOR.	MINE.	POST OFFICE.	Average thickness of vein, in inches.....	System—room and pillar or long wall...	By what power operated?.....	By what power ventilated?.....	How many divisions of air in mine?.....	Has mine railroad connections?.....	Number of kegs of powder used in 1893..
39 Sturmen Bros.....	Fair Ground.....	Burlingame.....	17	Long wall.....	Horse.....	Grate fire.....	1	No.....	.....
40 Bellville Coal and Mining Company.....	Bell.....	Scranton.....	18	".....	Steam.....	".....	2	Yes.....	.....
41 Jas. Ingham.....	Ingham.....	".....	18	".....	Horse.....	".....	1	".....	.....
42 Patrick Ryan.....	Ryan.....	".....	18	".....	".....	".....	1	".....	.....
43 Thomas Martin.....	Martin.....	".....	16	".....	".....	Natural.....	1	No.....	5
44 Thomas Chappell.....	No. 1.....	".....	18	".....	".....	Grate fire.....	2	Yes.....	.....
45 ".....	No. 2.....	".....	18	".....	".....	".....	2	".....	.....
46 ".....	No. 4.....	".....	18	".....	".....	".....	1	".....	.....
47 Harry Isaac.....	No. 5.....	".....	17	".....	".....	".....	1	No.....	.....
48 ".....	No. 6.....	".....	17	".....	".....	".....	1	Yes.....	.....
49 Williamson & Gates.....	Williamson.....	".....	18	".....	".....	".....	1	No.....	.....
50 Wm. H. Thomas.....	Excelsior.....	Carbondale.....	18	".....	".....	".....	2	Yes.....	.....
51 Rutter & Stevens.....	Stevens.....	".....	18	".....	".....	Natural.....	1	No.....	.....
52 N. D. Mathews.....	Mathews.....	Quenemo.....	13	".....	Man.....	".....	1	".....	.....
53 Rees Lewis.....	Lewis.....	Arvonla.....	13	".....	".....	".....	1	".....	.....
54 J. W. Jeremy.....	Jeremy.....	".....	13	".....	".....	".....	1	".....	.....
Totals.....									99
Small drift and strip banks.....									10
Recapitulation.....									109
Averages.....			16½						

NOTE.—All coal bituminous.

Record of Inspection.

The Carbon Coal Company's shaft mine No. 9 is operated by horse power, and is located one-half mile south of Peterton, on a switch of the Atchison, Topeka & Santa Fé railroad. It does both local and shipping business. Depth of shaft, 50 feet; size, 10 x 5 feet; thickness of coal, 15 inches; employs 49 men; capacity, 60 tons daily; has five openings; ventilation by grate fire; condition of mine, pretty fair; ventilation good.

The Carbon Coal Company's mine No. 10 is a horse-power shaft, located in Scranton, on a switch of the Santa Fé. Depth of shaft, 60 feet; size, 13 x 5; has two openings, and is ventilated by a furnace; system, long wall. This mine suspended work June, 1893, and did not resume operations until the beginning of 1894.

No. 12, Carbon Coal Company, is a horse power, located one-half mile west of Scranton, and has railroad connection with the Atchison, Topeka & Santa Fé. Depth of shaft, 30 feet; size, 13 x 5; has two openings; ventilation by furnace; system, long wall; has not been in operation since June, 1893. When I visited Nos. 10 and 12 they were not in operation; therefore I cannot describe their condition.

The Carbon Coal Company's mine No. 20 is a horse-power shaft, located one-half mile north of Osage City, on a switch of the Atchison, Topeka & Santa Fé railroad. Depth of shaft, 23 feet; size, 15 x 5½ feet; two openings; size of airshaft, 4½ x 4½ feet; ventilated by furnace; no escapement. Capacity, about 40 tons daily, employing about 35 men. At the time of my first visit, this mine was in a terrible condition, as the air, on coming down the shaft, simply went around a pillar and back to the upcast. At my second visit I found many improvements made, and the mine in pretty fair condition.

The Carbon Coal Company's mine No. 22 is a horse-power shaft, located in Osage City, on a switch of the Atchison, Topeka & Santa Fé railroad. Has both local and shipping trade. Depth of shaft, 37 feet; size, 13½ x 5 feet; size of airshaft, 5 x 5 feet; escapement stairway in the main shaft; ventilation by furnace; air divided into three currents, with circulation very good. Capacity, about 100 tons daily, employing 74 men. Coal about 15 inches thick.

The Carbon Coal Company's mine No. 23 is located on a switch of the Lyndon branch of the Atchison, Topeka & Santa Fé railroad. A shaft mine, operated by horse power, and employing 99 men. Daily capacity, 150 tons. Has no local trade. Depth of shaft, 36 feet; two openings; size of airshaft, 5½ x 5½ feet. Ventilation by furnace; air in four currents; one undercast. This mine is connected by good traveling way with mine No. 24, which is to be used as an escapement in case of need. Ventilation very good. Mine in fair condition.

The Carbon Coal Company's mine No. 24 is a horse-power shaft, located in Osage City, on a switch of the Atchison, Topeka & Santa Fé railroad.

Both local and shipping business. Capacity of shaft, 160 tons daily; employs 93 men; thickness of coal, 15 inches; depth of shaft, 38 feet; size, 15x5 feet; has two openings; size of airshaft, 5x5 feet; ventilation by furnace; air has four currents; escapement by connection with mine No. 23; ventilation and condition of mine, very fair.

The horse-power shaft mine No. 25 of the Carbon Coal Company is located south of Osage City, on a switch of the Atchison, Topeka & Santa Fé railroad. It does only a shipping business; has a capacity of 60 tons daily; employs 57 men; depth of shaft, 26 feet; size, 13½x5 feet; three openings; size of airshaft, 5x5; escapement ladder in main shaft; ventilation by furnace; air in three divisions; mine in fair condition and ventilation good, considering the amount of water to be contended with, and the roof, which is very soft and hard to hold up.

Mine No. 26 of the Carbon Coal Company is a horse-power shaft, situated at Peterton, on a switch of the Atchison, Topeka & Santa Fé railroad, and is 22 feet deep; has two openings; escapement ladder in main shaft; ventilation by furnace; air in two currents. The west side of this mine has been stopped, on account of water in the workings; employs 44 men; daily capacity, 60 tons.

The Carbon Coal Company's mine No. 27 is a horse-power shaft, located south of Osage City, on a switch of the Atchison, Topeka & Santa Fé railroad, and doing only a shipping trade. Depth of shaft, 36 feet; size 5x14 feet; daily capacity, 90 tons; employs 63 men; two openings; size of airshaft, 4½x4½ feet; ventilation by furnace and air in four currents, with undercast on the south side; ventilation of mine fairly good, with the exception of the second east entry on the south, and the east side of main south. At each of these places was a cave in, and a fault in the coal. Three or four hours' work in each place would have remedied the defects, but it has been continually neglected.

The Western Fuel Company's mine No. 2 is a horse-power shaft, situated two miles northeast of Osage City, on a switch of the Atchison, Topeka & Santa Fé railroad. Does only a shipping business; daily capacity, 65 tons; employs 55 men the year around; depth of shaft, 30 feet; size, 5x15 feet; escapement ladder in the main shaft; three openings; size of airshaft, 4x4 feet; ventilation by furnace; air in two currents. The workings on the south side broke through into the abandoned works of an old mine. This mine was very poorly ventilated, and had no manway around the bottom. Upon complaint, the defects were repaired.

The Western Fuel Company's mine No. 5 is a horse-power shaft, located 1¾ miles northeast of Osage City, on a switch of the Atchison, Topeka & Santa Fé railroad, and has both local and shipping trade. Depth of shaft, 30 feet; size, 15x5½; employs 46 men; daily capacity, about 40 tons; two openings; size of airshaft, 5x5 feet; stairway in main shaft. This mine is in splendid condition.

The Western Fuel Company's mine No. 6 is a horse-power shaft, situated one-half mile west of Osage City, on a switch of the Missouri Pacific railway. Has only shipping trade; employs 52 men. Depth of shaft, 59 feet; size, 16x5 feet; two openings, but escapement ladder is in main shaft; size of airshaft, 4 feet 10 inches square; ventilation by furnace; one current of air; daily capacity, 80 tons. This mine is in good condition since new manway has been put around the bottom.

The Enterprise Coal Company's mine is a horse-power shaft, 34 feet deep, located $2\frac{1}{2}$ miles northeast of Osage City, on a switch of the Atchison, Topeka & Santa Fé railroad. Capacity, 80 tons daily; employs 62 men; has only shipping trade; two openings; size of airshaft, 4x4; escapement ladder in the main shaft; ventilation by furnace; air in one current. Water is pumped from this mine by a windmill. Condition of mine, very good.

The Black Diamond Coal and Mining Company's mine is a horse-power shaft, 35 feet deep, located two miles east of Osage City, on a switch of the Missouri Pacific railway. Size of shaft, $13 \times 5\frac{1}{2}$ feet. Capacity, 80 tons daily, employing 53 men. Has only shipping trade. Two openings; stairway in main shaft; size of airshaft, 4x4 feet. Ventilated by furnace; air in three divisions, using an overcast for return of air from west side. Pumps worked by a windmill. Condition of mine good.

The Pittsburg Coal and Mining Company's mine No. 4 is a horse-power shaft, 45 feet deep, on a switch of the Missouri Pacific railway. Size of shaft, $15 \times 5\frac{1}{2}$ feet. Capacity, about 20 tons daily, employing 18 men. Two openings. Stairway is in main shaft. Ventilation by furnace, and circulation very fair. Mine in good condition.

The Pittsburg Coal and Mining Company's mine No. 5 is a horse-power shaft, 43 feet deep, located one mile west of Osage City. Size of shaft, 15×5 feet. This is a new mine that began operation in October, 1893. Only four men are employed.

The Swedish Coal and Mining Company's mine is a horse-power shaft, 30 feet deep, located in the limits of Osage City, without railway connections. It does both local and commercial business. Size of shaft, 13×5 feet; capacity, about 50 tons daily; employs 38 men; two openings; ventilation by furnace. This mine worked through into an old mine, which is used both as an upcast and an escapement. Ventilation rather poor; mine generally in good condition.

The Matthew Waddell mine is situated north of Osage City, without railroad connections. It has both local and commercial trade. It is a horse-power shaft, 77 feet deep. Size of shaft, 8×5 feet; two openings; size of airshaft, 4x4 feet; ventilated by furnace, with but one current of air; has a capacity of about 20 tons daily; employs 17 men; ventilation good. The mine is in good order, as it is perfectly dry, and has a good slate roof, easily held up.

The A. W. Granstrom mine is a horse-power shaft, 35 feet deep, without railroad connections, though by hauling coal on wagons to the switches the mine has both local and commercial trade. Size of shaft, 10x5 feet; capacity, about 30 tons daily; employs 19 men; two openings; size of airshaft, 3x3 feet; ventilation by furnace. Mine is worked out on east and west sides. This causes some waste of air, and, as the airshaft is so small, ventilation is very imperfect. This mine formerly belonged to the Superior Coal and Mining Company.

The Johnson & Anderson mine is a horse-power shaft, 65 feet deep, located north of Osage City, without, as yet, railroad connections, though coal is hauled to the switches, and the mine thus has both local and commercial trade. Size of shaft, 5x15 feet. This is a new mine, and began operations in September, 1893. Since January, 1894, a new airshaft has been sunk, and the ventilation is now by grate fire. Employs 15 men.

Lundquist & Olson operate a slope mine one mile southeast of Osage City, without railroad connections, though coal is hauled to the switches, thus giving the mine both local and commercial trade. Employs 22 men; two openings; size of airshaft, 2x2 feet; ventilated by grate fire, and circulation is very good, though but one current of air. Coal is pulled up the slope by horse power.

The Sunflower Coal Company's mine, formerly the William Simms mine, is a horse-power shaft, situated $1\frac{1}{2}$ miles east of Osage City. It has no railroad connection, but coal is hauled to switches; both local and commercial trade; depth of shaft, 35 feet; size, 10x15 feet; employs 16 men; two openings; size of airshaft, 4x4 feet; ventilated by furnace, with air in two currents; condition of mine is good, and ventilation is fair.

The Whalen & Ryan mine is a drift lying south of Osage City; has no railroad connections, but hauls coal to switches; trade, both local and commercial. Three openings. Size of airshaft, 3x3 feet; ventilated by furnace, with one current of air. Employs 16 men. This mine is operated in coal leased from the Carbon Coal Company. Since my first visit, a new airshaft has been sunk.

The Scandinavian Coal Company's mine No. 6 is a horse-power shaft, 40 feet deep, one-fourth mile north of Peterton, on a switch of the Atchison, Topeka & Santa Fé railroad. Does both local and shipping trade. Size of shaft, 16x5 feet; capacity, 60 tons daily; employing 47 men. Two openings. Size of airshaft, 4x4 feet. Stairway is in the main shaft. Ventilation by furnace; air is in two currents. Much trouble is caused by water in the workings on the south and east sides, which makes the roadways very muddy.

The Coughlin Bros. mine is a horse-power shaft, 31 feet deep, situated three-fourths of a mile northeast of Peterton. Has no railroad connection, but coal is hauled by wagon to the switches. Trade both local and commercial. Capacity, 45 tons daily, employing 30 men. Two openings; no

escapement. Size of airshaft, 4 x 4 feet; ventilation by furnace, with air in one current. Mine in good condition.

The Richard Underwood mine is a horse-power shaft, 105 feet deep, located 1½ miles south of Burlingame. Mine has no railroad connection, and depends on local trade. The mine is on Mr. Underwood's farm, and he, with his two sons, work therein when not employed in the fields. No airshaft and no escapement. Ventilated by grate furnace, with air in one current. When approached on the subject of an airshaft, he said he would stop the shaft until he put one down.

The mine operated by the Zucca Coal Company is a horse-power shaft, 80 feet deep, located two miles south of Burlingame, on a switch of the Santa Fé main line. Trade, commercial. Size of shaft, 14 x 5 feet. Two openings; size of airshaft, 4½ x 4½ feet. Capacity, about 25 tons daily; employs 23 men. Ventilated by furnace, with one current of air. Escapement stairways in both shafts.

The Gus. Hopkins mine is a horse-power shaft, 10 feet deep, situated 3½ miles southeast of Burlingame. Size of shaft, 5x5; two openings; natural ventilation. Mine is in fairly good condition; depends on local trade.

Mine No. 1 of the Burlingame Coal and Mining Company is a horse-power shaft, 85 feet deep, and sunk inside the corporate limits of Burlingame, on a switch of the Atchison, Topeka & Santa Fé railroad. Size of shaft, 12x5 feet; three openings; stairway in the main shaft; size of airshaft, 4x4; ventilated by grate furnace, with air in one current; trade both local and shipping; employs 14 men. Mine in good condition.

Mine No. 4 of the Burlingame Coal Company is a horse-power shaft, 84 feet deep, inside the limits of Burlingame, with connection by switch to the Atchison, Topeka & Santa Fé railroad. Size of shaft, 12x5 feet; trade both local and shipping; three openings. This mine is connected with mine No. 1, and the stairway of that shaft is used as escapement for both shafts. Ventilation by furnace, with air in one current. Mine in fair condition.

The Thomas Whitcomb mine is a horse-power shaft, 101 feet deep, located 2½ miles northeast of Burlingame; size of shaft, 6 x 12 feet; employs eight men; only one opening; no escapement; ventilation is very poor. Notified him to sink an airshaft, as required by law, but at first of year he had not done so.

The John D. Jack mine is a horse-power shaft, 85 feet deep, situated one mile southeast of Burlingame; has no railroad connections, but hauls coal on wagons to switches; local and shipping trade; size of shaft, 5 x 13 feet; two openings, but no escapement; ventilation by furnace, with one current of air; condition of mine, fairly good.

The Central Coal and Mining Company's mine is a horse-power shaft, 80 feet deep. Has no railroad connections, but coal is hauled to switches. Trade, local and commercial. Size of shaft, 9x5½ feet. Two openings

Escapement way in the airshaft; size of airshaft, 8x5 feet; ventilation by furnace, with one current of air. This mine is leased and operated by Mrs. Mings & Sons. Mine in good condition.

The Burkville Coal and Mining Company's mine is a horse-power shaft, 78 feet deep, located one mile east of Burlingame. Two openings. Ventilation by grate furnace. Condition of mine, fair.

The Champion mine, operated by Wafer & Slater, is a horse-power shaft, 30 feet deep, located four miles southeast of Burlingame. Size of shaft, 10x5 feet; only local trade, employing but 7 men; two openings, but no escapement; ventilation by furnace, and circulation is first class.

The Turner Bros.' mine is a horse-power shaft, 40 feet deep, located two miles southeast of Burlingame, having no railroad connections, and only local trade. Employs 13 men; size of shaft, 12x4½ feet; two openings; stairway in airshaft; size of airshaft, 4x4; ventilation by grate furnace.

The Foster mine, operated by Foster & Co., is a horse-power shaft, 103 feet deep, situated two miles east of Burlingame, on a switch of the Atchison, Topeka & Santa Fé railroad, having both local and commercial trade. Size of shaft, 12x6 feet; two openings; size of air shaft, 4x6 feet; escapement in hoisting shaft; employs 22 men; ventilation by grate furnace, and two divisions in air. Mine in good condition.

The Sturman Bros.' mine is a horse-power shaft, 80 feet deep, located at the southern edge of the city of Burlingame. Has no railroad connection, but coal is hauled by wagon to a Santa Fé switch. Trade, both local and commercial. Size of shaft, 12x5 feet. Employs 20 men. Two openings. Size of airshaft, 6x4½ feet; ventilation by furnace, with one current of air. The mine is pretty wet, and roadways are muddy. Condition of mine and ventilation, very fair.

The Belleville Coal and Mining Company's mine is a steam-power shaft, 100 feet deep, one-half mile west of Scranton, on a switch of the Atchison, Topeka & Santa Fé railroad. Size of shaft, 9½x4½ feet. Employs 60 men. Three openings, and escapement; ventilation by furnace, with air in two currents. Mine in good condition, but ventilation rather poor.

The Ingham mine is a horse-power shaft, 70 feet deep, two miles southwest of Scranton, on a switch of the Atchison, Topeka & Santa Fé railroad, and doing both local and commercial business. Size of shaft, 12½ x 6½ feet. Employs 27 men. Two openings; size of airshaft, 4x4 feet. Ventilation by grate furnace. Mine and ventilation in pretty fair shape.

The Ryan mine is a horse-power shaft one-half mile east of Scranton, on a switch of the Atchison, Topeka & Santa Fé railroad. Shaft is 13 x 5½ feet in size, and 40 feet deep. Trade, local and commercial. Employs 45 men. Three openings; stairway in main shaft. Ventilation by furnace. Mine was in splendid condition.

The Thomas Martin mine is a horse-power shaft, 92 feet deep, one-half mile northeast of Scranton; both local and commercial trade; employs 12

men; size of shaft, 6 x 14 feet; has no airshaft or second opening; natural ventilation. This is a new mine, beginning operations in 1893. Mine is in fair condition.

The Thomas Chappell mine No. 1 is a horse-power shaft, 60 feet deep; lies one-half mile west of Scranton, on a switch of the Atchison, Topeka & Santa Fé railroad, and does both a local and commercial business. There are three openings, one of them fitted with an escapement. Employs 39 men. Ventilation by furnace, with air in two currents. This mine is fairly ventilated, and in pretty good condition.

Thos. Chappell's mine No. 2 is a horse-power shaft, 65 feet deep, located one-fourth mile west of Scranton, on a Santa Fé switch. Size of shaft, 8x5 feet; employs 44 men; has local and shipping trade; three openings, one of them fitted with stairway; ventilation by furnace, or grate fire, and two divisions in air. Pumps in shaft are worked by windmills. Shaft and mine in good shape, but very poorly ventilated.

The Harry Isaacs mine No. 4 is a horse-power shaft, 30 feet deep, located south of Scranton, on a switch of the Santa Fé, doing both a local and shipping business. Size of shaft, 10x5 feet; employs 22 men; two openings; size of airshaft, 4x4 feet; ventilated by grate-fire furnace. This shaft was in a dreadful state, as the return air course was choked by fallen roof, and, there being no pit boss to attend to them, the roads were very muddy and dirty. However, Mr. Isaacs agreed to attend to these defects at once.

Harry Isaacs' mine No. 5 is a horse-power shaft, 70 feet deep, situated 2½ miles southwest of Scranton, on a switch of the Santa Fé, and doing only a shipping business. Employs 37 men; size of shaft, 13x5 feet; two openings; stairway in main shaft; ventilation by grate fire. Condition of mine, pretty good.

Harry Isaacs' mine No. 6 is a horse-power shaft, 48 feet deep, located at the east side of Scranton, on a Santa Fé switch. Size of shaft, 12x5 feet. Employs 20 men. Ventilation, at present, by grate fire. There was no manway around bottom, but Mr. Isaacs, upon request, put one in, and also sunk an airshaft.

The Williamson & Gates mine is a horse-power drift, situated 1¼ miles east of Scranton. Has no railroad connection, and has only local trade. Employs 7 men. Two openings, and good ventilation. Condition of mine, good.

The Wm. Thomas mine is a horse-power shaft, 26 feet deep, situated three-fourths of a mile southeast of Carbondale, on a Santa Fé switch, doing both local and shipping business. Employs 16 men. Four openings; two divisions in air; ventilation by grate fire; two escapements. Mine in pretty good shape.

The Rutter & Stevens mine is a slope, located 1½ miles east of Carbondale, having only local trade. Employs five men. Two openings, and ventilation good. Mine in good condition.

The W. D. Matthews drift mine is located $2\frac{3}{4}$ miles south of Quenemo, doing only a local business, and employing 13 men; two openings. Mine in good condition.

The Rees Lewis drift mine is located $1\frac{1}{2}$ miles west of Arvonía, and employs five men in furnishing a local trade. Has three openings, but ventilation is very poor. Mine is in fairly good condition.

The J. W. Jeremy drift is situated one mile west of Arvonía. Mr. Jeremy works here alone. Sells to local trade. Mine in good shape.

There are 13 other small drifts in operation, which, however, did but very little during the year, and their employés, as well as their output, will be found included in the report of strip banks. It is almost impossible to keep any record of these small mines, as they change proprietors so often. Some of these operators are Wm. Roady, Ferris Tyson, John Wallace, J. Zable, M. B. Smedley, Neal & Patrick, and J. More.

Analysis of the Earnings of the Osage County Coal Miners for 1893.

The mines of this county, for the year 1893, yielded 6,308,266 bushels of coal, to produce which 1,558 miners were employed. This makes an average of a little more than 30 bushels per day for each miner for the $134\frac{3}{4}$ days the mines worked, or an average annual output of $4.048\frac{3}{4}$ bushels per miner. As the average price paid for mining in Osage county in 1893 (as the foregoing table will show) was $5\frac{2}{3}$ cents per bushel, the average annual earning of the miner was \$218.63. To this we will add (for work, such as turning rooms) \$5, or about $2\frac{1}{4}$ per cent. of the miner's earnings, which is acknowledged to be far in excess of the amount received per man. This makes a total earning of \$223.63 for the year 1893.

It is customary on idle days for the miner to go into the mine and prepare coal, for the next day the shaft is expected to hoist. As the mines of this county worked on an average $134\frac{3}{4}$ days in 1893, it is safe to give one-half more time to the miner than is credited to the mines. This would be working 201 days. Now, from the miner's gross earnings must be deducted the miner's expenses. In this county the miner pays 1 per cent. of his earnings for blacksmithing, which is \$2.23 for the year. A gallon of oil, for lighting purposes, will last a miner about 25 days; thus he uses 8 gallons of oil, which, at 60 cents per gallon, costs him \$4.80. To this it would be safe to add \$1.50 per year for general repairs of mining tools; thus making a total expense of \$8.53, leaving the miner \$215.10 for his yearly earnings—an average of $\$17.92\frac{1}{2}$ for every month in the year, or $\$1.59\frac{1}{2}$ for every day the mine worked in 1893, or an average of $68\frac{2}{5}$ cents for each of the 312 working days of the year, and an average of $58\frac{1}{5}$ cents for each of the 365 days of the year.

The tenant miner of Osage county pays an average rent of \$4 per month, or about $13\frac{1}{2}$ cents per day, leaving him $45\frac{1}{2}$ cents per day. As a general rule, 85 per cent. of the miners contribute to the support of families, which

consist of from 4 to 6, and sometimes 8 to 10, including the parents. However, we will base the average miner's family at the lowest possible estimate, of four.

It is an acknowledged fact that $2\frac{1}{2}$ cents per meal, or $7\frac{1}{2}$ cents per diem, would not be considered as living very extravagant. The cost, at $7\frac{1}{2}$ cents each, allowing three meals per day, for a family of four, would be 30 cents per day— $11\frac{3}{4}$ cents less than that allowed by the state for the support of the individual convict now in the Penitentiary, at Lansing.

The sum of $15\frac{1}{2}$ cents still remains, with which the miner is supposed to buy fuel, clothing, boots, and shoes, pay for medical attendance, contribute to the support of churches (as 90 per cent. of all miners in Osage county are considered good Christians), and buy school books for his children when attending school, as the average miner is desirous of educating his children, notwithstanding the limited and restricted means by which he is governed financially.

In the foregoing analysis, my object is to present this question of wages, as received by the miner, to those who are fair-minded enough to accept the truth when it is presented to them. These statements are founded upon facts, and I challenge successful contradiction. I will admit that some miners earned more, but the basis of this analysis is to give a correct and accurate statement of the average, and must be taken from the table of Osage county showing the production of each coal mine therein.

TABLE SHOWING EARNINGS OF MINER IN OSAGE COUNTY FOR 1893.

Average number of days mine worked.....	134 $\frac{3}{4}$
Average number of bushels produced per miner in the county.....	4,048 $\frac{3}{4}$
Average price paid per bushel for unscreened coal.....	\$0 05 $\frac{3}{4}$
Average earnings per miner for the amount of coal produced	\$218 63
Adding 2 $\frac{1}{4}$ per cent. of miner's earnings for room turning, etc.....	5 00
Miner's total earnings.....	\$223 63
MINER'S EXPENSE FOR THE TIME WORKED.	
Lard oil.....	\$4 80
Blacksmithing.....	2 23
General repair of mining tools.....	1 50
Total expense.....	8 53
Balance, or net earnings due the miner.....	\$215 10
Average daily earnings for 134 $\frac{3}{4}$ days mine worked, less expense.....	\$1 59 $\frac{1}{2}$
Average earnings for 312 working days of the year.....	68 $\frac{7}{8}$
Average earnings for 365 days of the year.....	58 $\frac{7}{8}$
Average daily rent to miner, 13 $\frac{1}{2}$ cents, leaving.....	45 $\frac{1}{2}$
Calculating four persons to each family, at a cost of $2\frac{1}{2}$ cents each per meal, or $7\frac{1}{2}$ cents per diem, is 30 cents, leaving.....	15 $\frac{1}{2}$

REPUBLIC COUNTY.

In this county only one shaft is in operation, that of S. F. Curtis, near the Cloud county line (Mr. Curtis's post-office address is Minersville, Cloud county). There has been a shaft at Scandia, but it was abandoned and has caved in. Mr. Curtis sunk a new shaft on the same farm (his own) and abandoned the old one for it. The coal is from 16 to 18 inches thick, and of inferior quality, though selling readily in that locality. Kind of coal, lignite; output for 1893, 40,124 bushels, or .056 per cent. of the entire out-

put of the state, and is valued at \$4,413.64. Number of men employed, 19. Shaft worked 156 days during the year. Miners are paid \$1.60 per ton for mining; push their own coal and cage it. On the occasion of my visit to the Curtis mine, I found him about to begin sinking a new main shaft within 16 feet of the airshaft. I called his attention to section 1, chapter 143, of the mining laws of Kansas, compelling shafts to be at least 80 feet apart, and also called his attention to the fine and penalty for its violation. He distinctly told me he would sink whenever and wherever he pleased, and cared nothing at all about the law. I also notified him of his abandoned shaft, which stood open, neither being filled up nor fenced around. He refused to inclose it, as he claimed it was on his own land, and that the law stopped at the boundary of his farm. However, he at last filled it up. This man appears to have no respect for the laws of the land, particularly in this case. There are no strip mines in Republic county.

RUSSELL COUNTY.

In this county, I found three small drifts and one shaft, but the latter had been abandoned. A. Heard's drift is located $3\frac{1}{2}$ miles southwest of Wilson. Wilson is in Ellsworth county. Joseph Neeley operates a drift about one-fourth mile from Mr. Heard's drift. Joe Menzie operates a drift about seven miles south of Bunker Hill. The vein found in this county averages about 12 inches; lignite coal, and a very poor quality. Coal is mined on the long-wall system. Average number of miners employed, 35, and 5 day hands; total, 40. Number of bushels produced in 1893, 52,500, or .073 per cent. of the entire output of the state. Estimated value, \$6,825. This coal readily sells at 13 cents per bushel at the mine, irrespective of its quality. These mines are operated only in winter; all local trade. Many of the miners told me, while on my visit of inspection to these two counties last summer, that from 1,000 to 1,400 pounds of coal was a very good day's work. In my predecessor's report, I find Ellsworth county producing 151,000 bushels, and Russell county producing 160,000 bushels, for the year 1891. I failed to find many things he credited to those two counties, and, as there are no strip works, I cannot imagine where the amount of coal was produced. My report is based on the figures forwarded to this office by the operators; therefore I believe 90 per cent. of them have given accurate figures in their statements. In these western mining counties of Kansas there is next to no system pursued in operating the mines, and I consider them very fortunate in not having met with some serious—very serious—accidents ere now.

SHAWNEE COUNTY.

There are six mines in this county—five shafts and one drift. Average depth of coal from surface, 32 feet; average thickness of coal, 13 inches. Output for 1893, 190,835 bushels, or .265 per cent. of the entire output of

the state; estimated value, \$22,900.20. Number of men employed, 54. This coal is of a fairly good quality of bituminous, and is mined for local trade only. It sells at the pit head for \$3 per ton. Miners are paid 8 cents per bushel for mining. Two of the mines are at Silver Lake, and one new mine has been opened at Dover. The others are all in the vicinity of Topeka. I did not expect to find these mines in very good condition, as none of them have second openings. Ventilation in all of them is by grate fire. In the year 1893, two accidents occurred in the county, one of which resulted fatally. An account of these will be found in the table of accidents. Some of those who operate near Topeka told me they would suspend operation if they were forced to sink a second opening. However, I gave them sufficient time to make their calculations.

SUMMARY OF THE COAL-PRODUCING COUNTIES IN KANSAS FOR 1893.

A summarization of the statistics for each coal-producing county is here-with presented, giving a comprehensive view of the coal-mining industry of Kansas for the year 1893.

The table following shows the number of employés at mines in each county; also credits each county with the per cent. of output of the state, showing the number of bushels and the estimated value.

TABLE SHOWING NUMBER OF EMPLOYÉES, PER CENT. OF OUTPUT OF STATE, NUMBER OF BUSHELS,
AND THE ESTIMATED VALUE, BY COUNTIES, FOR 1893.

COUNTIES.	<i>Number of employés.</i>	<i>Per cent. of output of the state.</i>	<i>Number of bushels.</i>	<i>Estimated value.</i>
Atchison.....	25	.003	2,375	\$213 75
Bourbon.....	185	.659	475,000	33,250 00
Chautauqua.....	33	.062	44,000	4,400 00
Cherokee.....	2,307	28.030	20,194,898	1,009,744 90
Cloud.....	43	.124	89,695	9,866 45
Coffey.....	95	.520	375,000	32,812 50
Crawford.....	3,665	47.790	34,431,627	1,721,581 35
Ellsworth.....	30	.083	60,000	7,800 00
Franklin.....	105	.765	551,290	44,103 20
Labette.....	40	.139	100,000	9,000 00
Leavenworth.....	989	9.035	6,509,463	423,115 09
Lincoln.....	30	.083	60,000	7,800 00
Linn.....	264	2.571	1,852,119	92,605 95
Osage.....	1,973	9.742	7,018,942	529,899 61
Republic.....	19	.056	40,124	4,413 64
Russell.....	34	.073	52,500	6,825 00
Shawnee.....	54	.265	190,835	22,900 20
Totals.....	9,891	100.000	*72,048,268	\$3,960,331 64

* Equivalent to 2,881,930 tons of 2,000 pounds.

Seventen different counties in Kansas produced 72,048,268 bushels, or 2,881,930 tons (short, 2,000), which had a cash value at the mine of \$3,960,331.64, for the production of which 9,891 men were employed in 1893.

The coal is all bituminous, or soft coal, except a very small portion, which is of the lignite variety. The veins run from 14 to 48 inches in thickness.

The best coal bed is in the southeast part of the state, and is known as the Cherokee coal. It is extensively mined in Cherokee and Crawford counties. The average depth of this coal bed in Cherokee county is 58 feet 1 inch; average thickness of vein, 3 feet 5½ inches. The average depth of the coal bed in Crawford county is 57 feet 10¾ inches; average thickness of vein, 3 feet 2¾ inches. Further to the north and west numerous coal beds are operated, such as the Fort Scott coal, the Pleasanton and Boicourt coals, the La Cygne coal; and about seven miles east of La Cygne a good

vein of coal, averaging about 3 feet 2 inches, is yet undeveloped, except for local trade. The Leavenworth coal is about 721 feet from the surface, and averages between 20 and 22 inches in thickness. The coal field of Osage county averages 16 $\frac{3}{4}$ inches in thickness, and is mined very extensively at an average depth of 53 feet 4 $\frac{1}{2}$ inches.

Although 17 different counties are coal producing, four counties, viz., Crawford, Cherokee, Osage, and Leavenworth, produced 94.597 per cent. of the entire output of the state in 1893. As the output for the year 1892 was not reported by my predecessor, I have no real knowledge except through the report furnished this office by the mineral resources of the United States, issued from the government printing office, Washington, D. C., which credits Kansas with 75,181,900 bushels for 1892, which is an increase of 3,133,632 bushels, as compared with the state output for the year 1893.

However, I find by the report of E. W. Parker, of the United States geological survey, dated April 13, 1894, that he only credits Kansas with 61,341,025 bushels, or 2,453,641 tons, for the year 1893. My figures of the state's output, which I believe are correct, credit Kansas with 72,048,268 bushels—10,707,243 bushels more than given by Mr. E. W. Parker, of the United States geological survey. I have taken particular pains in collecting the annual output, and made personal visits where I could not obtain the necessary information by letter, as many of the operators are very dilatory, knowing that the law prescribes no penalty for noncompliance in this case. However, by an untiring effort, I collected the output in every coal-producing county, which is very gratifying, taking into consideration the general depression and the strike, or suspension; also, the open winter, which was an unusually poor one for the coal trade. By reference to the Inspector's report for 1891, it will be seen that 68,843,114 bushels were produced in the state for that year. And in spite of all the depression and suspension which prevailed, Kansas produced 72,048,268 bushels for the year 1893, an increase of 3,205,154 bushels, as compared with the production of 1891.

In 1891, the total number of employés was 8,949. I find that in 1893 9,891 were employed, a gain of 942. Of the boys employed in mines all over the state, I found but very few who are under age, and whose earnings maintained a widowed mother or an invalid father; nevertheless, I notified the mine boss on all occasions to comply with the law, which has been done, as a general rule.

There are but 10 states in the union which produce a larger annual output of bituminous coal than Kansas, and but seven the output of which has a greater market value at the mines. The principal coal fields are Cherokee and Crawford counties. Osage county comes next as to the number of employés, but does not produce a proportionate share of the output according to the number of miners employed, as the coal only averages about 16 inches in thickness, which is mined on the long-wall system; and miners who have worked in the Osage district for years inform me that from 20 to

30 bushels per day per miner is considered a fair day's work. The Leavenworth coal field is operated on the long-wall system. Those mines are considered the most dangerous in the state, on account of their depth; but they do not bear out the statement as being true, as the table of fatal and non-fatal accidents clearly proves that the coal fields of southern Kansas are the most dangerous, having the greatest number of accidents according to the number employed. In this coal field the system is room and pillar, and the coal is blasted out of the solid, by which many accidents occur, particularly to shot firers.

The largest output of any mine in the state is that of the Cherokee & Pittsburg Coal and Mining Company's mine No. 1, Frontenac, Crawford county, producing 5,844,827 bushels—very near as much as the whole of Leavenworth county. Just as this article goes to the press, a report comes to this office stating that a vein of cannel coal $4\frac{1}{2}$ feet in thickness has been discovered at Dennis, Labette county. Whether this report proves true or not, it indicates what the possibilities are for any portion of Kansas.

The quality of coal in southern Kansas is fully equal to the average soft coal produced in the Mississippi valley. The chemical composition of the Cherokee coal compares very favorably with the Pittsburg, Pa., bituminous coal, as is shown by the following analysis made by Prof. E. H. S. Bailey, of the State University:

	<i>Cherokee.</i>	<i>Pittsburg, Pa.</i>
Water.....	1.94	1.31
Volatile.....	36.77	36.61
Fixed carbon.....	52.45	54.17
Ash.....	8.84	7.91

The steam-producing power of the Kansas coal has also been elaborately tested by Professor Blake, of the State University. An average of tests of nine different samples gave the figures 13.51. The best Indiana block coal gave 14.43. These figures confirm the statements that southern Kansas coals are good steam producers.

From the column of percentages in the table of counties, it will be seen that the output of coal in the state comes practically from four counties, particularly from Crawford and Cherokee counties. The relative position of these counties, as to their output, is shown in the following table:

	1889.	1891.	1893.
Crawford per cent. of total output.....	39.30	33.56	47.790
Cherokee per cent. of total output.....	24.50	32.50	28.030
Osage per cent. of total output.....	18.44	17.10	9.742
Leavenworth per cent. of total output.....	11.45	10.60	9.035
Totals.....	93.69	93.76	94.597

The annual output of coal in Kansas for years 1885 to 1893, inclusive, is as follows:

YEAR.	Bushels.
1885.	36,001,427
1886.	34,750,000
1887.	39,251,985
1888.	42,500,000
1889.	53,819,149
1890.	62,901,347
1891.	68,843,114
1892 (report on mineral resources of the United States, Washington, D. C.).....	75,181,900
1893.	72,048,268

The coal industry of Kansas is rapidly coming to the front as one of the largest wealth producers, as the foregoing table shows the output of coal has increased 100 per cent. since 1885, doubling the output in eight years.

The proximity of the rich Kansas coal fields to the southwest Missouri mining district caused the erection of zinc smelting works at Weir City in 1873, before zinc ore was mined in the state. With the increasing market for spelter (metallic zinc), due largely to the extra demand for galvanized sheet iron and iron wire, the zinc industry has increased with wonderful rapidity during the last 20 years. It will probably be a great surprise to many to learn that Kansas, the great agricultural and stock-raising state, occupies so important a place in the mining and metallurgical world. But such is the case. Pittsburg, Kas., is to-day the greatest zinc-smelting town in the world, with Weir City a close follower, while Girard, Scammon and Galena are following not far behind. However, in the brief description and history of the mineral resources of Kansas, but very little if any consideration is given to the craft that unearths this hidden treasure at the risk and peril of their lives.

Over \$6,000,000 worth of lead and zinc ores, salt and gypsum, mineral paints and clays, have been mined in Kansas in 1893, but the mining laws of our state make no provision whatever as to the health and safety of those employed in mines (except coal mines, and but very little in that direction), as the prevailing opinion has been in the past that none but lawyers and bankers were capable of legislating in behalf of a craft that produces and adds to the wealth of our state about 9½ million dollars annually.

Since my appointment, I received several letters from miners who work in metallic, gypsum and salt mines, complaining of ventilation and dangerous surroundings in the mines above mentioned. I was of the opinion that my jurisdiction did not extend over those mines, and, were I so empowered, it would be almost impossible to inspect them, as there are more coal mines in the state than three inspectors can properly attend to. On receipt of one letter in particular, stating the dangerous condition of one of these mines, I was determined to visit it, if empowered; consequently, I wrote to the attorney general as follows:

Hon. John T. Little, Attorney General, Topeka, Kas.:

DEAR SIR—Kindly inform me whether I have any jurisdiction over the salt, lead and gypsum mines, or not. Respectfully,

A. C. GALLAGHER, *Inspector of Coal Mines.*

In the course of a short time I received the following answer:

A. C. Gallagher, Coal Mine Inspector, Pittsburg, Kas.:

DEAR SIR—In answer to your inquiry, would state that you are Coal Mine Inspector of the state of Kansas, and your jurisdiction extends over that class of mines only.

JOHN T. LITTLE, *Attorney General.*

Upon receipt of the attorney general's letter, I wrote to the individual whose letter I received a short time previous, and informed him of the attorney general's opinion. This, in my opinion, is a deplorable condition of affairs, and nothing short of special or class legislation: to think that a miner, whether employed in a salt mine, a lead mine, or a gypsum mine, would not be entitled to the same consideration as a miner in a coal mine.

The intent and purpose of the law, in its true spirit, is for health and safety of those employed. By reports of newspapers published in the locality of lead and zinc mines, it will be seen that accidents of a serious nature frequently occur in and around the lead and zinc mines of Galena, Kas.

I do earnestly recommend that our next legislature, irrespective of politics, will extend the protection due to those who contribute so largely to the wealth of Kansas, and whose dangerous occupation in any shaft, slope, drift or pit in the state should be considered, as a sanitary and protective measure.

The state should be divided into at least three distinct and separate districts, appointing an inspector in each district, who should perform the duties assigned to him by law, particularly as to health and safety of those employed. The magnitude of the territory over which one inspector in Kansas has to travel makes it impossible for him to perform his duties as required by law, as there are more mines in the state than there are days in the year; and some of those mines in southern Kansas, having such a large area, and employing so many miners therein, would require at least six days to inspect the various chambers where miners are employed. I made no effort to collect statistics from any other mineral resource in the state except the coal mines, believing that this one industry was more than I could properly attend to. In many instances I had to write as many as six letters to some operators, and then make a personal visit, before I could get any satisfaction.

I would recommend that the statistics relating to the mining industry of the state be collected and compiled by the labor commissioner, whose duty it is, according to law. The law grants the labor commissioner the following:

Chief clerk.....	\$1,000 00
Assistant clerk.....	800 00
Incidental expenses.....	500 00
Expenses of special agents.....	200 00
Postage.....	500 00
Total, in addition to his own salary.....	\$3,000 00

One of those clerks should be appointed for the special purpose of collecting and compiling mining statistics, as our mining industry ranks as the second largest industry in Kansas. However, such clerk or agent should have a thorough knowledge of mines and mining; otherwise he would be a detriment to the industry, the labor bureau, and the state.

MINERAL PRODUCTIONS OF AMERICA DURING 1893.

The report on mineral resources for 1893, compiled by the United States geological survey, under the supervision of Dr. David L. Day, has been completed. It shows an aggregate valuation of \$609,586,083, of which \$358,604,217 represents the nonmetallic products, and \$249,981,866 the metallic products, with an unspecified product of \$1,000,000 more. The total is the smallest for any year since 1889, and is an aggregate decline of over \$75,000,000 from the previous year. The principle feature is the falling off in pig iron, which showed a reduction of more than \$46,000,000 in valuation, and 2,000,000 long tons in production. Both gold and silver increased in production. The increase in gold was \$2,950,000 in valuation, and 142,706 troy ounces in production. Silver increased 5,000,000 troy ounces, with an increase in valuation of \$2,585,057, taken at its coining value of \$1.2929 per troy ounce. Copper increased in production about 16,000,000 pounds, and nearly \$6,000,000 in value. Lead decreased almost 50,000 tons, or \$5,000,000. Zinc decreased about 9,000 short tons, and almost \$3,000,000 in valuation. Aluminum increased about 80,000 pounds, or \$94,000. Nickel has fallen off nearly 50 per cent. in quantity, and over that percentage in the value of the product. Bituminous coal increased 1,216,306 long tons, but decreased \$2,500,000 in value, Pennsylvania anthracite increased 1,319,550 long tons, and \$3,000,000 in value. Building stone increased about \$15,000,000, and lime \$4,000,000 in value. The largest gain in production was in petroleum, which increased \$3,000,000 in value. Natural gas decreased \$500,000, and mineral waters \$650,000. Resulting from the decline in the production of pig iron, the production of limestone for iron flux decreased 1,200,000 long tons, and about \$1,200,000 in value. Phosphate-rock production increased 240,000 long tons, and over \$800,000 in value.

The totals are: Pig iron, 7,124,502 long tons, \$84,810,426; silver, 60,000,000 troy ounces, \$77,575,757; gold, 1,739,081 troy ounces, \$35,950,000; copper, 337,316,848 pounds, \$32,054,601; lead, 163,892 short tons, \$11,839,590; zinc, 78,832 short tons, \$6,306,560; quicksilver, 30,163 flasks, \$1,108,527; aluminum, 39,629 pounds, \$266,903; antimony, 250 short tons, \$45,000; nickel, 49,399 pounds, \$22,197; tin, 8,983 pounds, \$1,788; platinum, 75 troy ounces, \$517; bituminous coal, 114,527,198 long tons, \$122,667,020; Pennsylvania anthracite, 48,170,000 long tons, \$85,684,465; lime, 58,000,000 barrels, \$35,960,000; building stone, value \$33,865,573; petroleum, 46,412,666 barrels, \$28,923,326; natural gas, value, \$14,346,250; clay, except potters', value \$9,000,000; cement, 8,002,462 barrels, \$6,262,841; mineral waters, 23,-

533,395 gallons, \$4,236,535; phosphate rock, 942,361 long tons, \$4,141,570;

salt, 11,357,178 barrels, \$3,931,137; limestone for iron flux, 3,958,055 long tons, \$2,374,833; zinc white, 24,059 short tons, \$1,804,430; potters' clay, 400,000 long tons, \$900,000; gypsum, 253,615 short tons, \$696,615; borax, 8,699,000 pounds, \$652,425; mineral paints, 37,713 long tons, \$530,283; sulphur, 1,200 short tons, \$42,000; and asbestos, 50 short tons, valued at \$2,500.

ACCIDENTS.

Seventy-six accidents occurred in and around the coal mines of the state in 1893. They are treated in this chapter both in tabulated and descriptive forms. In many cases, however, I could not obtain all the facts connected with the accidents, such as dates and injuries received. I am, therefore, unable to give an account of the same. These accidents are treated under two heads, viz., fatal and nonfatal.

FATAL ACCIDENTS.

The number of fatal accidents which occurred in connection with the coal mines of Kansas during the year 1893 was 15. The counties in which they happened are as follows:

Cherokee.....	7
Crawford.....	5
Leavenworth.....	2
Shawnee.....	1

Only 13 of these, however, can be duly credited against the output of the state, as two, viz., Jesse Curry and William McKeever, were not directly connected with the output of coal. The death of the latter, McKeever, an imported negro, resulted from an altercation with one Charles Elliott, mine boss, at mine No. 8, Central Coal and Coke Company. I make mention of this death because it occurred at a coal mine in which both parties were employed. The reasons why the death of Jesse Curry is not credited against the output of coal are, not being an employé, and the shaft at which he was killed producing no coal in 1893. With an output of 72,048,268 bushels for 1893, 13 fatal accidents would give a ratio of 5,542,174 bushels of coal mined to every fatal accident. Of the 15 fatal accidents, 3 were caused by falling roof, 3 by falling down shafts, 2 by shot firing, and 1, a driver, whose death, when investigated, was somewhat a mystery. The reports of the deaths of the remaining 6—4 of whom were colored miners, and worked in Cherokee and Crawford counties, and the other 2, one a convict, and the other an officer in the Penitentiary or state mine, when reported, in January, 1894—gave no particulars. (See table of fatalities.) Only 4 of the 15 were practical miners.

TABLE OF FATAL ACCIDENTS FOR 1893.

<i>Date of accident.</i>	<i>Date of death.</i>	<i>WHERE ACCIDENT OCCURRED.</i>	<i>NAME.</i>	<i>Residence.</i>	<i>Married or single.</i>	<i>Occupation.</i>	<i>How employed at time of accident.</i>	<i>Cause.</i>
Jan. 19	Jan. 19	M. V. Carpenter's mine, Shawnee county.....	Elijah Hoddison.....	Topeka.....	.....	Miner.....	Mining.....	By falling soapstone.
Feb. 4	Feb. 4	Central Coal and Coke Co.'s mine No. 6, Cherokee county.....	Morgau Jenkins.....	Weir City.....	Married..	"	Shot firing.....	Struck by coal blown from shot.
Apr. 7	Apr. 7	Scammon Coal Co.'s mine, Cherokee county.....	Lyman Moore.....	Columbus.....	"	Carpenter.....	Building top landing for cage.....	Fell down shaft.
Apr. 7	Apr. 7	Fidelity Land and Improvement Co., Cherokee county.....	Jesse Curry.....	Cherokee.....	Single...	Laborer.....	Emptying barrel of water on pit top.....	Fell down shaft.
Apr. 13	Apr. 13	Western Coal and Mining Co.'s mine No. 5, Crawford county..	Jas. Thornton.....	Yale.....	"	Miner.....	Was setting up drilling machine.....	Fall of roof.
Aug. 24	Aug. 27	Williamson & Turkinton's mine, Cherokee county.....	Wm. Williamson...	Scammon.....	Married..	"	Shoveling coal.....	Fall of slate.
Sept. 18	Sept. 18	Cherokee and Pittsburg Coal Mining Co.'s mine No. 1, Frontenac, Crawford county,	Jas. Halladay.....	Litchfield.....	Single...	Mule driver....	About to get off cage at first landing.....	Fell down shaft.
Nov. 1	Nov. 1	K. & T. Coal Co.'s mine No. 20, Crawford county.....	Jas. Keaton.....	Pittsburg.....	"	"	Driving mule.....	A mystery: found dead under car in mine.
Nov. 13	Nov. 13	K. & T. Coal Co.'s mine No. 22, Litchfield, Crawford county..	Cain Hodge*.....	Litchfield (stockade).....	.....	Miner.....	Shot firing.....	Going back on shot he supposed had missed.

The following list of fatal accidents were not reported to this office until January, 1894. These accidents happened in 1893. However, I was not notified until the following names appeared upon the statistics blanks forwarded by the operators and recorded as fatalities, not giving the date or cause:

Central Coal and Coke Co.'s mine No. 6, Cherokee county..	John Jenkins*.....	Weir City (stockade at No. 6)....	Married..	Miner.....	.....	Not stated.
Central Coal and Coke Co.'s mine No. 6, Cherokee county..	Andrew Holmes*..	Weir City (stockade at No. 6)....	"	"	.....	Not stated.
Central Coal and Coke Co.'s mine No. 8, Cherokee county..	Wm. McKeever*..	Weir City (stockade at No. 8)....	.....	"	.....	Not stated.
K. & T. Coal Co., Crawford county.....	— Harris*.....	Litchfield (stockade).....	.....	"	.....	Not stated.
State mine, Leavenworth Co....	Josa Thorpe.....	Lansing.....	Married..	Office in Penitentiary mine.....	.....	Not stated.
State mine, Leavenworth Co....	Frank Dolan.....	Penitentiary.....	Single...	Convict.....	.....	Not stated.

* Colored.

RECORD OF FATAL ACCIDENTS.

Elijah Hoddison was killed by a fall of soapstone, at N. V. Carpenter's mine, at Fairmount, three miles west of Topeka, Shawnee county. The statement given by the following witnesses goes to show that death was caused by neglect to prop roof:

In the case of accident to Elijah Hoddison, employed as miner at mine owned by the operator, M. V. Carpenter, on the 19th day of January, 1893, we, the undersigned, have carefully examined the locality of said accident, and find that the injury consisted of we know not what; he was killed instantly by falling soapstone. To the best of our judgment, the injury was caused by neglect to prop, and the responsibility for said accident rests upon the deceased.

Made this 9th day of February, 1893.

C. W. CARPENTER.
W. O. BUTLER.
J. A. JOHNSON.
JOSEPH WALLWORK.

Morgan Jenkins, employed as shot firer at mine No. 6, Central Coal and Coke Company, better known as Keith & Perry Company, met a sad fate on February 4, 1893, at about 7 o'clock P. M. In the third room on north side of second east entry, he was found unconscious by Mr. Griffiths, another shot firer. This accident happened previous to my appointment. Such being the case, I can give no details. Mr. Jenkins was a native of Wales, 42 years old, and married; was the father of seven children, all of whom survive him. Mr. Jenkins was well known in Cherokee county and was highly respected by all who knew him.

In the case of accident to Morgan Jenkins, employed as shot firer at No. 6 mine, owned by the Keith & Perry Coal Company, on the 4th day of February, 1893, the undersigned have carefully examined the locality of said accident, and find that the injury consisted of being struck on the head by a piece of coal, from a shot that he was firing in a room in the second east entry, which was caused by his own neglect, or by being mistaken and running into the wrong room, opposite or next to same room that he was firing from. To the best of our judgment, no one is to blame, and the responsibility for said accident rests upon himself.

Made this 4th day of March, 1893.

DANIEL GRIFFITHS.
ROBT. ABBOTT.
WILLIAM HUMBLE.
JNO. WORSLEY.

Lyman Moore, a carpenter by trade, and a resident of Columbus, Kas., came to his death April 7, 1893, at the Scammon Coal Company's shaft, located one-fourth mile southwest of Steppville, and $1\frac{1}{2}$ mile north of Columbus. This mine was commonly known as the Osthoff Bros.' mine, at present leased by the Scammon Coal Company. The deceased, Lyman Moore, fell from the top landing, a distance of 76 feet, and landed on the west cage, which was then on the bottom. He was doing some carpenter work on top, and it is claimed he slipped off a plank which he used as a scaffold to sit on. This plank projected across and over the buntings which divide the main shaft in the center. I am led to believe, after a careful investigation, that the deceased was thrown down the shaft by the action of

the opposite cage coming in contact with the end of the plank, which projected over the center of the shaft, which is termed in mining phraseology "midwall." I diligently inquired into the cause, and I am led to believe that the cage which descended shortly before the deceased fell was lowered to the cage seat, having a water box adjusted under the cage, which filled itself in the sump by means of a clack valve, consequently necessitating the raising of the east cage to a level with the top landing. By so doing, the east cage was bound to come in contact with the plank before mentioned. The engineer acknowledged to me that he was in the act of hoisting water. The deceased was a married man, and the father of two children. He lived $2\frac{1}{2}$ hours. I questioned Samuel Cunningham, B. Smith, Fred. Osthoff, farmer, Stewart Crewson, engineer, Geo. Adams, miner, Jake Henney, top hand, and Wm. Hollingsworth, carpenter, who were working on the same day on the shaft. All they knew was that he fell into the shaft bottom. Investigation, April 11, 1893.

AFFIDAVITS.

I was at the Scammon Coal Company's works on Friday, April 7, 1893, at the time the accident happened to L. C. Moore. I was on the girders and saw Mr. Moore fall. He had a scaffold of one board, 2 inches thick and about 12 inches wide; but as to the cause of the accident, I don't know. The distance the said Moore fell was 75 feet. He asked for the cage to fix his scaffold, and a few moments after he told Mr. Crewson, the engineer, to lower the cage, which was done; and I don't think it was over 15 minutes until I saw him falling.

WILLIAM HOLLINGSWORTH.

I was at work at the Scammon Coal Company's works on April 7, 1893. I was at work about 40 or 50 feet away from the mouth of the shaft, and what attracted my attention was, I heard some lumber falling, and, looking up, I saw L. C. Moore falling; and I was at the mouth of the shaft as soon as they raised him up to the top, and I thought him dead, and I helped carry him to the engine room; but as to the cause of the accident, I don't know.

JACOB HENNEY.

I was in the engine room of the Scammon Coal Company's works on Friday, April 7, 1893, and saw L. C. Moore falling from the works above the shaft; could see him until he passed below the surface. As to the cause of said L. C. Moore's falling, I cannot say, but my judgment is that the board he was standing on slipped with him.

STEWART CREWSON.

On Friday, April 7, 1893, at the Scammon Coal Company's works, at the time of the accident happening to L. C. Moore, I was at the bottom of the shaft, and was about 10 yards away from him. I heard some boards falling, and I did n't know anyone had fallen until I was a few yards away and saw the said L. C. Moore lying at the bottom of the shaft; and when I first saw him I took him to be dead. I was the first man that took hold of him, and helped to raise him to the top, and remained with him until he died, which was about $2\frac{1}{2}$ hours from the time he fell. As to the cause of the accident, I do n't know.

J. E. WARSTLER.

At the Fidelity Land and Improvement Company's shaft mine No. 1, Jesse Curry, who was working in Thomas Clark's place, on Friday, April 7, 1893, fell down the shaft, a distance of 77 feet. While in the act of emptying a barrel of water, he slipped off the truck that covered the top of the

shaft. He was rendered senseless by the fall. In addition to internal injuries received, both legs were broken by the fall. Doctors Graves and Boyer were in attendance soon after the accident, which happened at 3:30 P. M. The poor fellow's sufferings were relieved by the grim hand of death at 11:15 P. M. that night. Deceased was 20 years of age, unmarried, and resided in Cherokee, Crawford county. The shaft where this accident occurred is at Maplewood, five miles southwest of Cherokee. I was not notified until after the man was buried.

In case of accident to Jesse Curry, employed as top man at mine No. 1 owned by the Fidelity Land and Improvement Company, on the 7th day of April, 1893, I, the undersigned, have carefully examined the locality of said accident, and find that the injury consisted of fracture of one leg—badly fractured—in three places, which resulted in death on the same day, which was caused by falling down the shaft, a depth of 77 feet. To the best of my judgment, the injury was caused by the party standing on truck, and possibly at same time was taken with a fit, as I have since learned he was subject to such spells. The responsibility for said accident rests upon himself. He was not an employé of the company, but was working in place of the regular man employed for this work, and was working at the request of this regular employé, and not at request or by permission of the company. He had worked only two parts of days.

Made this 10th day of April, 1893.

W. E. TURKINGTON, *Superintendent.*

At mine No. 5, Western Coal and Mining Company, located at Yale, Crawford county, James Thornton came to his death by the fall of a rock in room No. 2, between the hours of 11 P. M. and 3 A. M., April 13, 1893. I was in Leavenworth county at the time, and Con. Kelleher acted in my absence, according to instructions, as deputy. He examined the place where the deceased was killed, and was present at the coroner's inquest, which is as follows:

In case of accident to James Thornton, employed as shot firer at No. 5 mine, owned by the Western Coal Company, on the 13th day of April, 1893, we, the undersigned, have carefully examined the locality of said accident, and find that the injury consisted of head being crushed, which was caused by a fall of rock in room No. 2, in second south entry, on west side of mine. It consisted of one piece, about 14 feet in length and 3 feet in width, and ranged from about 6 inches to 1 foot in thickness. To the best of our judgment, the injury was due to his own carelessness in not placing a prop under the rock or taking it down; and the responsibility for said accident rests upon himself, as it was his duty to set timber, if necessary, to make the place safe, and the setting of one prop would have prevented the accident.

Made this 1st day of May, 1893.

T. KNEEDLER.

WM. HASSLER.

ERIC ISRAELSON.

JOHN RUSSELL.

My age is 24 years; occupation, miner for last nine years; I run a machine. I know deceased—known him for the last four years. I saw him last, alive, 11:10 P. M., in No. 2 room, mine 5. I was in the room with him at that time. I noticed his room. It was well timbered. I first saw him dead about 3 A. M., April 13. He was lying on his left side; one of his legs was sticking out; rest of his body covered; his face on the bottom; a large rock, length 12 or 14 feet, and about 3 feet wide, and about 12 or 14 inches thick.

BEN. DAVIS.

My age is 37 years; occupation, coal miner for last 28 years; residence, Yale. I know deceased; saw him last alive April 12, 1893, about 8:30 P. M.; was going down in mine. I first saw him dead 3:10 A. M., April 13; his right leg was out from under rock up to knee, all the rest of his body was covered with rock; he was lying on his left side, with his left side of his face on the bottom; the rock was one piece; the rock was about 12 or 14 feet long, about $2\frac{1}{2}$ to 3 feet wide; some parts were 14 inches thick. I helped to take the rock off him; nothing but his body to support part of the rock. Blasters supposed to keep timbers safe.

JOSEPH MARKLAND.

My age is 26 years; occupation, coal miner for past 10 years. I knew deceased in the mine for past two weeks. He was a laborer. Last time I saw him was Saturday last. I saw him dead first this morning, shortly after 7 A. M., in room in his boarding house. My occupation is timber man. I was acquainted with the room deceased lost his life in—room 2. Do not exactly know condition room was in last night. The room was well propped. The roof was nothing extra above roadway. I was room at 4 P. M., and set timbers in the room at the time. I left the room in good condition for work. I have been examining the rock almost every day.

DAVID JONES.

My age is 21 years; occupation, miner for the past five years; no personal acquaintance with the man. Do you know him to be a laborer in the mine? Yes, sir. At what time did you see him dead. At 3 A. M., when I found him lying on his left side, the rock wedged up to about his breast. My work in the mine is scraper after the machine. What room did the deceased work in? No. 2 room; room seemed in good condition. Question by juryman: How large was the rock? About 10 or 12 feet long. The rock was over him—should say his limbs. Had you been in the room prior to this? Yes, sir. Was there anything said about the rock being good or bad? Nothing said.

WILL. ROSS.

An inquest, holden at Yale, in Crawford county, on the 13th day of April, A. D. 1893, before me, G. E. Cole, coroner of said county, on the body of James Thornton, a person there lying dead, by the jurors whose names are hereto subscribed. The said jurors, upon their oaths, do say: That the deceased, James Thornton, came to his death by the accidental fall of a rock in mine No. 5 and room No. 2, Yale, Kas., between the hours of 11 o'clock P. M. and 3 o'clock A. M.; and that his death was not felonious.

In testimony whereof, the said jurors have hereunto set their hands, the day and year aforesaid.

GEO. W. HARE.
OLIVER GRIFFITHS.
HENRY ELLINGS.
G. H. MC KINNEY.
LOUIS DEAN.
J. D. POLLOCK.

Wm. Williamson, whose practical and theoretical knowledge of mines and mining surpassed that of the average miner in this district, received internal injuries in a mine located northeast of Scammon, and in which he was interested, which proved fatal. On the 24th day of August, while in the act of shoveling coal, a part of the roof fell upon him, bruising his entire body. He lived in great agony for a few days, but finally passed to his last resting place. The deceased was highly respected by all who knew him. He leaves a wife and family, who reside in Scammon. The deceased, Williamson, was a native of Scotland, and held many positions of trust under certain coal companies in this country.

About 5 o'clock on the evening of the 18th of September, Frank Laden, regular engineer, hoisted a cage of men from the bottom to the first or lower landing. Names of those on the cage are as follows: John Shaw, John McFadden, John Sweeney, Isaac Bailey, Fred. Spain, Frank Fogelberg, and the deceased, James Halladay. The cage stopped at the lower landing as usual, at which place the miners generally get off when being hoisted. All of the above-mentioned miners got off, with the exception of Fogelberg and Halladay. Said Halladay was in the act of getting off when the cage started toward the top landing, his head coming in contact with the gate on northeast side of shaft, and before he had time to recover, owing to the rapid ascent of the cage, he was struck against a cross beam about half way between first and second landing, thus dashing him to the bottom head foremost, a distance of 106 feet, killing him instantly. His body was taken to the top, and Mr. Wilson, the superintendent, sent a man to Girard to notify the coroner, G. E. Cole. Instead of Mr. Cole coming, he sent a man by the name of Squire Mason, of Girard, who went to the engine room, talked to the engineer, and started for home, claiming it was unnecessary to hold an inquest.

I went to Frontenac as soon as notified, and talked to Frank Fogelberg, the only man on the cage when Jas. Halladay fell down the shaft. He considered the necessity of an inquest, so did Mr. Wilson, the superintendent, and Fogelberg followed the so-called coroner, Mason, to Pittsburg; but he had gone on the train to Girard. I notified Mr. Fogelberg to call together at 2 P. M. all those men who were on the same cage with the deceased, Halladay. They met at the engine room, also the two shot firers, Gus. Peterson and Elijah Dodson, who saw Jas. Halladay fall down the shaft, and I got their statement. Statement of Frank Laden, engineer, is as follows: "While in the act of lifting his chair, it caught the steam valve, causing the cage to make a rapid ascent, thus causing the accident."

I caused several witnesses, amongst whom were Wm. Golden, of Pittsburg, Mr. Rankin, Mr. Wilson, superintendent, and several others, to come into the engine room, and had Frank Laden, the engineer, hoist the north cage to where it was when the men were getting off, then place his chair in or about the same position as it was in before he lifted it. He (Laden) then lifted the chair, showing how it caught and opened the steam valve. By doing so the engine started, and the north cage went rapidly toward the shive wheels.

However, Jas. Halladay met an untimely death, he being the only support of an aged and widowed mother and two sisters. I do severely criticise the so-called coroner for not having an inquest held, and have the jurors render a verdict either to exonerate Frank Laden, the engineer, or hold somebody responsible. In my estimation, there are too many of these accidents overlooked. If there is blame, let it rest where it belongs.

In case of accident to James Halladay, employed as a driver at No. 1 mine, owned

by the Cherokee & Pittsburg Coal and Mining Company, on the 18th day of September, 1893, we, the undersigned, have carefully examined the locality of said accident, and find that the injury consisted of falling down No. 1 shaft, at Frontenac, Kas., and we believe that death was almost instantaneous, which was caused by the removing of the engineer's chair, which, striking the steam lever, caused the cage to ascend just as James Halladay was in the act of leaving the cage, and, losing his balance, fell backward into the shaft. To the best of our judgment, the injury was accidental, and the responsibility for said accident rests upon no one; and that we, the undersigned, can swear to the above.

Made this 20th day of September, 1893.

F. O. HOGELBERG.
JOHN SHAW.
ELIJAH DODSON.
GUS. PETERSON.
JUSOEUN RUNISZARE.

A young man, whose name is given as James Caten, or Keaton, employed as a driver at No. 20, was found dead under an empty pit car by Oscar McCoy, a miner, who testified as follows: "About 3:30 P. M., November 1, while on my way to the bottom, I found the deceased, James Keaton, under the front car of an empty trip, composed of three empties. It was in fourth west on north side, about 60 or 70 yards from main entry. Upon examination, I found out he was dead. I went back toward the face of fourth west and called upon Richard Ring, a miner, to come immediately, stating that a driver was dead. We lifted the car, which was off the track, and pulled him out, and with the assistance of others we put him in the car, and the body was taken to the top."

As soon as notified, at 7 P. M., by a miner, I went to the shaft immediately, and in company with the mine boss, Peter Simmons, and Oscar McCoy, and Richard Ring, went down into the mine, about 8 P. M., and examined the place where the deceased, James Keaton, was found dead.

There is no fall of roof or obstruction of any kind visible. The mule was unhitched when found, and the tail chain was partly around the neck or shoulders of the deceased. There is a little incline or grade in fourth west, and my opinion is that he was walking in front of the cars to keep them back, and stumbled, as there are gutters 15 inches deep between the ties; consequently the cars ran on him when down, which is evident by a mark or bruise on right side, and one on right shoulder. Mr. Doubleday notified the coroner, but up to 10:30 P. M. received no answer.

The poor, unfortunate man seems to have been a stranger, as no one knows anything about him. This was his first day as a mule driver. However, he is some mother's affectionate but most unfortunate son.

Last saw deceased on Wednesday, about 1 o'clock. He was gathering his trip to return to bottom. I next saw him on the fourth entry, under a car, dead. The mule was unhitched from the trip. The time I found him was half past 3 in the afternoon. He was under the car crosswise, his feet sticking out. The tail chain was around his neck. He was stiff. The driver was going west; the grade was a little down; was not acquainted with the driver.

OSCAR MCCOY.

Do not know the deceased. I do not know of his having trouble with anyone. I helped Oscar McCoy lift deceased from beneath the car. A car weighs about 800

pounds. I did not notice any marks on the body. He was near the center of the car. His head was between the wheels, and he was lying across the track. The whole weight of the car was on the deceased. The roof was five feet high along the entry, and the driver, sitting in the car, would have two feet free between his head and the roof. There was a little down grade where the accident occurred.

RICHARD RING.

Saw driver on Wednesday, at 7, and at times until noon. Next saw him in the car, dead. Noticed no marks. Did not know of his having had trouble with anyone.

A. G. W. SAMPLES.

I first met deceased 10 days ago. He said he was an experienced man; that he had driven a mule in mine No. 18. Last saw deceased at about 11 o'clock. Next saw him dead. Wednesday was his first day at driving.

PETER SIMEON.

Not acquainted with deceased. Saw him Wednesday, at 9 o'clock, at face second and end on north. Saw him at noon, eating dinner. Saw dead body on top. New driver; did not seem to understand his route. Pit boss told him did not consider him much of a driver. Deceased said he was an experienced driver, and could haul more coal than anybody.

D. T. RAY.

I have known deceased for 10 months. I first met him at Pittsburg. He had some trouble with Fletcher, who said that when they met there would be blood. His wife, deceased claimed, is dead since July. Fletcher was down on the river Wednesday.

EVA THOMISON.

Known deceased for 10 months; he was in St. Louis in that time; had trouble with Fletcher about a picture. He was at my house for a month in the spring. Deceased was in the penitentiary, at Lansing, Kas.; sent up from Oklahoma, for rape and shooting an officer. I heard Fletcher say that he would kill deceased; he made the threat Sunday morning at 8 o'clock.

LUCY BRASIER.

Have known deceased since April. I saw him alive on Tuesday evening. I started to work at mine No. 20 two weeks ago.

WILLIAM FLETCHER.

An inquest, holden at shaft No. 20, at Pittsburg, in Crawford county, on the 2d day of November, A. D. 1893, before me, G. E. Cole, coroner of said county, on the body of James Caton, or a person unknown, there lying dead; by the jurors whose names are hereto subscribed. The said jurors, upon their oaths, do say: We, the jury, find that deceased came to his death by being run over by pit car, by accident in shaft No. 20, owned by the Kansas & Texas Coal Company, on November 1, 1893.

In testimony whereof, the said jurors have hereunto set their hands, the day and year aforesaid.

E. E. FORD.

J. J. CAMPBELL.

D. A. BROWN.

JAMES HENRY.

N. E. WOOD.

R. E. CARLTON.

G. E. COLE, Coroner.

Cain Hodge, a colored shot firer, and a late arrival from Alabama, was killed by going back on a missed shot. Sam. Smith, another colored shot firer, who accompanied the deceased, is the only man who could give any information. He testified before the coroner's inquest, the following day. The following is extracted from the Pittsburg *Kansan*:

"A MODEL INQUEST.

"On Saturday last an inquest was held on the body of one of the imported negro miners, who was working in shaft 22, Litchfield, for the Kansas & Texas Coal Company. The dead body was found in one of the entries, and the story leaked out be-

fore he could be buried, so the Kansas & Texas Company was forced to go through the form of holding an inquest.

"The jury was made up of company employes, mostly, if not all, from their armed mercenaries; the witnesses were company employes; the company's legal adviser was examining attorney; the doctor who testified as to the cause of death is in the company's service; the inquest was held in the company's blacksmith shop; and the shop is situated inside the company's stockade, within whose fortified limits no person is permitted to go without the written or verbal authority of the officer in command.

"It was not difficult to get such a verdict from such a jury, conducted by such persons, in such a place, as the corporation wanted, and so the nigger was officially dropped into his hole to await the signal from Gabriel's trumpet.

"What think ye of this, ye free men of Kansas? A great public function involving the death of a human being, and, perhaps, a question of sanitation to the community, held in a private barricade, conducted by the hired creatures of an unscrupulous corporation, under the guns of its hired Hessians.

"Who can tell how that negro came to his death? Who knows that he was not a victim of yellow fever, smallpox, black vomit, or some other of the pestilent disorders that prevail among the negroes in the black belt? Or, again, suppose his death was accidental, is the Kansas & Texas Coal Company to be awarded the prerogative of sitting in judgment on the victims of its own probable criminal neglect? Such exalted privilege is not awarded any aristocrat in all England; yet, here in Kansas it goes without a protest."

AFFIDAVITS.

I am a coal digger at Kansas & Texas Coal Company's shaft No. 22; have worked there little over two months. I have seen Cain Hodge during his life often, but was not personally acquainted. Was in the mine last night after Cain came to his death, before the body was removed. When I first went down with Mr. Smith, who led the way, I saw the dead body of Hodge. The deceased was wounded in the forehead, and looked as if his skull was crushed. He was lying on his back when I saw him. I, with others in the mine, laid down until bank boss should come; he did not come. We took the body out, and took it to place it now lies. I know deceased to be Cain Hodge. The body was not covered with coal or anything when I saw him. I do not know how deceased came to his death.

CHARLES HAMILTON.

Have known deceased since he was about five years old. Cain was about 24 years old. He was a shot firer at the time of his death. I was working with deceased the night he came by his death, November 13. Cain had fired one shot in the entry, and I told him not to go back in the entry, and he said he was going back. He went back into the entry, and about the time he got back a shot went off. I called him after shot went off, but I got no answer from him. I went in and hunted for him. My light went out, and I crawled up the track and found him in main south entry of the Kansas & Texas Coal Company's shaft No. 22. Cain has worked in mines most of his life. He has had experience in shot firing. When I first found him, I lit a match and saw he was dead. I then came to top of the shaft and told the night watch my "buddy" was dead. Several men went back with me into the mine, and brought the body out and took it to the place where he is now. I pulled deceased around a little when he was first found by me, and called him, but he did not answer. After I lit a match I found his head had been crushed. I know that the body of deceased is that of Cain Hodge. I know that the pit boss of the mine has instructed shot firers not to go back after lighting shot under 5 or 10 minutes after shot was lit, but deceased returned in less than three minutes.

SAM. SMITH.

I was at mine last night after Cain Hodge was killed; went down into mine after I found he was dead. It seems that Hodge fired his first shot and lit another at the same time. Only one shot went off, and deceased went back to see why second shot did not go off at same time. Just then the second shot went off. The deceased's shots were fired all right. Do not know why second shot did not go off at time of other shot. When I got in the mine, the body was loaded in a pit car, being brought to main shaft, to be brought from the mine.

OSCAR YOUNG.

An inquest, holden at Kansas & Texas Coal Company mine No. 22, Litchfield, in Crawford county, on the 14th day of November, A. D. 1893, before me, G. E. Cole, coroner of said county, on the body of Cain Hodge or a person unknown, there lying dead, by the jurors whose names are hereto subscribed. The said jurors, upon their oaths, do say, that deceased, Cain Hodge, came to his death in the main south entry of Kansas & Texas Coal Company's mine No. 22, about 8 o'clock P. M., on the night of November 13, 1893. By the evidence rendered, he had lighted two shots at once, in the main south entry, and only one went off. After waiting less than three minutes, he returned to see the other shot, contrary to the caution and advice of his partner, and the last shot exploded and crushed his skull, killing him instantly. We find the deceased, Cain Hodge, came to his death by his own carelessness.

IN TESTIMONY WHEREOF, The said jurors have hereunto set their hands the day and year aforesaid.

CHARLES A. WATSON.
JOSEPH PALMATEER.
J. W. HAMILTON.
D. D. BOTTS.
WM. MCKNIGHT.
JAMES DAY.

G. E. COLE, *Coroner*.

John Jenkins and Andrew Holmes (colored), whose fatalities are recorded in table, came from Alabama during the suspension of the Cherokee county mines. I was not notified of any such accident until the Central Coal and Coke Company forwarded statistics of 1893 to this office, in January, 1894.

Wm. McKeever's death may not be counted as an accident; nevertheless, I make mention of it, as it happened at the mine.

NOTE.—Wm. McKeever, a colored miner and a late arrival from Alabama, was shot by Chas. Elliot, mine boss, at mine No. 8, Central Coal and Coke Company, near Weir City, Cherokee county. Elliot may have been justified in his action, as the negro was considered a dangerous character.

The inquest over the colored man, Harris, at Litchfield, was held by Esquire E. M. Mason, and there is no copy of the inquest only that filed with the county clerk. The other three find inclosed. Most respectfully, G. E. COLE, *Coroner*.

This man Harris referred to came to his death in one of the Kansas & Texas Coal Company's mines. He was an Afro-Alabamian. I was not notified of his death until I received the above note from the coroner of the county, in February, 1894; accident occurred in the autumn of 1893.

To the above list of fatal accidents may be added the names of two persons who were killed at the State Penitentiary mine, at Lansing. One of these, Josa Thorpe, was an officer connected with the Penitentiary mine, while the other, Frank Dolan, was a convict miner. The latter was single, but the former was married. I was not notified of these accidents, and, consequently, cannot give the causes or dates of occurrence, nor any detailed account of the same.

NONFATAL ACCIDENTS.

The number of nonfatal accidents for the year ending December 31, 1893, was 61, many of which were of a serious nature. They occurred in the following counties:

Crawford	33
Osage	11
Cherokee.....	10
Leavenworth.....	5
Linn	2

The causes are as follows:

Fall of roof	27
Fall of coal	9
Explosion following shots.....	5
Burned by natural gas.....	4
Caught by cage.....	4
Caught by mine cars.....	3
Struck in eye by sulphur spark.....	3
Falling down shaft	2
Gas lighting in needle hole.....	1
Piece of timber falling down shaft.....	1
Caught by pump piston.....	1
Shot exploded while tamping.....	1
Total.....	61

The last of these was the most serious, a description of which is given as accident No. 20.

TABLE OF NONFATAL ACCIDENTS FOR 1893.

No. 1, January 20; Kansas Shaft Coal and Mining Company's mine No. 1, Crawford county; J. W. West, Cornell; miner, employed at mining; fall of roof; broken leg.

No. 2, March 20; Western Coal and Mining Company's mine No. 2, Fleming, Crawford county; Louis Fleece, Fleming; miner, employed at mining; fall of roof; both legs broken.

No. 3, April 5; Pittsburg & Midway Coal Company's mine No. 4, Crawford county; Patrick Logan, Midway; miner, employed at widening main east entry for double track; fall of roof; third finger on left hand and collar bone broken, and cut on head.

No. 4, April 5; Pittsburg & Midway Coal Company's mine No. 4, Crawford county; John Bunton, Midway; miner, employed at widening main east entry for double track; fall of roof; collar bone and three ribs broken, and skull fractured.

No. 5, April 5; Western Coal and Mining Company's mine No. 2, Fleming, Crawford county; Alf. Gaffney, Fleming; miner, employed at mining; burned by natural gas; burned on face, neck, and hands.

No. 6, April 22; Western Coal and Mining Company's mine No. 3, Fleming, Craw-

ford county; Hugh McNeilly, 1 $\frac{1}{2}$ miles northwest of shaft; miner, employed at mining; fall of roof; broken leg.

No. 7, April 28; Western Coal and Mining Company's mine No. 2, Crawford county; Ignacius Paulowitz, Fleming; miner, employed at mining; fall of coal; broken leg.

No. 8, May 4; Western Coal and Mining Company's mine No. 5, Yale, Crawford county; Wm. Delany, jr, Yale; miner, employed at loading coal after machine; fall of roof; bruised and cut on head and body.

No. 9, June 5; Home Mining Company's mine, Leavenworth county; Martin McDonald, Leavenworth; miner, employed at timbering; fall of roof; scalp wound, right leg broken, and foot crushed.

No. 10, June 14; Davis's mine, Cherokee, Crawford county; John Davis, Cherokee; miner, employed at sinking airshaft; falling down shaft; foot fractured and injuries on body.

No. 11, June 26; Santifer mine, Crawford county; Oscar Barnett, Pittsburg; miner, employed at mining; fall of roof; broken arm.

No. 12, August 14; Leavenworth Coal Company's mine, Leavenworth county; Jas. Graham, Leavenworth; pump man, employed at oiling pump; caught by pump piston; lost fore finger of right hand.

No. 13, August 15; Arnott & Lanyon's mine, Crawford county; Sylvester Kenson, Pittsburg; miner, employed at mining; car breaking loose from trip and running back down grade to face of entry and catching; broken leg.

No. 14, August 20; Kansas & Texas Coal Company's mine No. 37, Litchfield; Crawford county; S. G. Sigman, Litchfield; miner, employed at shot firing; explosion of shot; burned on face, neck, and hands.

No. 15, August 24; Kansas & Texas Coal Company's mine No. 37, Litchfield, Crawford county; Sherman Dotts, Litchfield; miner, employed at (don't know); caught under cage; badly bruised and crushed.

No. 16, August 25; Black Diamond Coal Company's mine, Crawford county; M. B. Ferguson, Pittsburg; mine operator, employed at dumping coal on top; falling down shaft; breastbone and three ribs broken.

No. 17, September 7; Durkee Coal Company's mine No. 4, Crawford county; Fois Emery (colored), mining camp, Schwab's farm; trying to mine coal; fall of roof; broken leg.

No. 18, September 30; Western Coal and Mining Company's mine No. 5, Yale, Crawford county; Mark Perry, Yale; laborer; fall of roof; cut on head.

No. 19, October 5; Root mine, Crawford county; C. Martin, Pittsburg; miner, piece of timber falling down shaft; cut on head.

No. 20, October 20; Cherokee & Pittsburg Coal and Mining Company's mine No. 4, Chicopee, Crawford county; Jas. McGregor, Chicopee; miner; employed at tamping shot; shot exploded while being tamped; permanent disability—both eyes blown out and right arm disabled; face, hands and breast almost burned to a crisp and entirely denuded of flesh.

No. 21, October 21; Peter Graham's mine, Cherokee county; Quincy Adams, Scammon; miner; employed at mining; fall of coal; bruised.

No. 22, November 2; Kansas & Texas mine 37, Litchfield, Crawford county; Emeilins Seig, Litchfield; miner; employed at mining; fall of roof; internal injuries.

No. 23, November 11; Durkee Coal Company's mine No. 4, Crawford county; Peter Luppini, Weir City; mule driver; employed at filling crosscut; fall of roof; leg broken, and other bodily injuries.

No. 24, November 23; Cherokee & Pittsburg Coal and Mining Company's mine,

Frontenac, Crawford county; John Kittos, Frontenac; miner; employed at mining; fall of coal; leg broken.

No. 25, December 2; Western Coal and Mining Company's mine No. 6, Yale, Crawford county; Joe Longcake, Yale; miner; employed at mining; fall of roof; leg broken.

No. 26, December 8; Cherokee & Pittsburg Coal and Mining Company's mine No. 2, Frontenac, Crawford county; David Purdon, Greenbush; farm hand; employed at shot firing; gas lighting in needle hole; leg and ankle badly lacerated.

No. 27, December 14; Cherokee & Pittsburg Coal and Mining Company's mine No. 2, Frontenac, Crawford county; Thos. Phillips, Frontenac; driver; employed at driving; foot caught between cars; hook of tail chain went through his foot.

No. 28, December 20; Cherokee & Pittsburg Coal and Mining Company's mine No. 2, Frontenac, Crawford county; Ed. Pezze, Frontenac; miner and shot firer; employed at shot firing; explosion; face, neck and arms burned.

No. 29, December 20; Cherokee & Pittsburg Coal and Mining Company's mine No. 2, Frontenac, Crawford county; Grul Tucno, Frontenac; miner and shot firer; employed at shot firing; explosion; face, neck and arms burned.

No. 30, December 20; Cherokee & Pittsburg Coal and Mining Company's mine No. 2, Frontenac, Crawford county; Frank O'Neal, Frontenac; miner and shot firer; employed at shot firing; explosion; face, neck and arms burned.

No. 31, December 20; Cherokee & Pittsburg Coal and Mining Company's mine No. 2, Frontenac, Crawford county; Ed. Erwin, Frontenac; miner and shot firer; employed at shot firing; explosion; face, neck and arms burned.

The list now following contains those of which I have received no dates. Many of the returns forwarded to me were only partial, and the absence of the date of injury was a marked feature of the reports I received. In fact, I was not informed of such accidents having occurred until the yearly statistical reports from the operators were received; therefore, I am unable to give the character of injuries, or the causes which led to the accidents, in many instances. A descriptive explanation of the following cannot be given:

No. 32; Leavenworth Coal Company's mine, Leavenworth county; Jim Taylor, Leavenworth; miner; employed at mining; burned by natural gas; face, hands and neck burned.

No. 33; Leavenworth Coal Company's mine, Leavenworth county; Squire Williams, Leavenworth; miner, employed at mining; burned by natural gas; face, hands and neck burned.

No. 34; Kansas & Texas Coal Company's Riverside mine No. 84, Leavenworth county; John Dornachowski, Leavenworth; miner, employed at mining; burned by natural gas; burned on arms and back.

No. 35; Central Coal and Coke Company's mine No. 7, Cherokee county; John Murray, Scammon; miner, employed at mining; eye injured by sulphur spark.

No. 36; Central Coal and Coke Company's mine No. 7, Cherokee county; Patric Griffin, Scammon; miner, employed at mining; eye injured by sulphur spark.

No. 37; Central Coal and Coke Company's mine No. 7, Cherokee county; Anglo McCormick, Scammon; miner, employed at mining; fall of roof; foot sprained.

No. 38; Central Coal and Coke Company's mine No. 8, Cherokee county; Robt. Mitchell; miner, employed at mining; fall of coal; bruised.

No. 39; Wear Bros.' mine, Cherokee county; Alf. Bennett, Weir City; miner, employed at mining; fall of coal.

No. 40; Excelsior Coal Company, Cherokee county; Grant Carlock, Weir City; miner, employed at mining; caught by cage.

No. 41; Kansas & Texas Coal Company's mine No. 18, Cherokee county; Wm. Fox, Weir City; miner, employed at mining; fall of roof.

No. 42; Kansas & Texas Coal Company's mine No. 18, Cherokee county; P. Lessen, Weir City; miner, employed at mining; fall of roof.

No. 43; Kansas & Texas Coal Company's mine No. 18, Cherokee county; Chas. Bilock, Weir City; carpenter; caught under cage.

No. 44; Wear Coal Company's mine No. 2, Crawford county; Chas. Besson, Chicopee; caught by cage.

No. 45; Pleasanton Mining Company, Linn county; Fred. Garrett, Pleasanton; miner, employed at mining; fall of roof.

No. 46; Pleasanton Mining Company, Linn county; Moses Thomas, Pleasanton; miner, employed at mining; fall of roof.

No. 47; Minard & Company's shaft, Crawford county; A. Lambargh, Pittsburg; miner, employed at mining; caught by mine car.

No. 48; Kansas & Texas Coal Company's mine No. 17, Crawford county; G. W. Jenkins, Litchfield; miner, employed at mining; fall of coal.

No. 49; Kansas & Texas Coal Company's mine No. 37, Crawford county; Julius De Maret; Litchfield; miner, employed at mining; fall of roof.

No. 50; Black Diamond Mining Company, Crawford county; Wm. Richards, Pittsburg; miner, employed at mining; struck in eye by piece of coal.

No. 51; Carbon Coal Company's mine No. 10, Osage county; Mike Lindregan, Seranton; miner, employed at mining; fall of roof.

No. 52; Carbon Coal Company's mine No. 12, Osage county; Henry Hall, Seranton; miner, employed at brushing; fall of roof.

No. 53; Carbon Coal Company's mine No. 12, Osage county; Sam Barlow, Seranton; miner, employed at brushing; fall of roof.

No. 54; Carbon Coal Company's mine No. 22, Osage county; Frank Peterson, Osage City; miner, employed at mining; fall of coal; hand hurt.

No. 55; Carbon Coal Company's mine No. 23, Osage county; Chas. Noble, Osage City; miner, employed at brushing; fall of roof.

No. 56; Carbon Coal Company's mine No. 24, Osage county; Chas. Olson, Osage City; miner, employed at brushing; fall of roof.

No. 57; Carbon Coal Company's mine No. 27, Osage county; Frank Rosetta, Osage City; miner, employed at mining; fall of coal and roof.

No. 58; Western Fuel Company's mine, Osage county; Gust Lindahl, Osage City; miner, employed at mining; fall of coal and roof.

No. 59; Burlingame Coal and Mining Company, Osage county; A. Daniels, Burlingame; miner, employed at mining; fall of roof.

No. 60; Thos. Martin's mine, Osage county; — Myers, Seranton; miner, employed at mining; fall of roof.

No. 61; Harry Isaacs' mine, Osage county; August Kroft, Seranton; miner, employed at mining; fall of roof.

In case of accident to J. W. West, employed as miner at No. 1 mine, owned by the Kansas Shaft Coal and Mining Company, on the 20th day of January, 1893, the undersigned have carefully examined the locality of said accident, and find that the injury consisted of a broken leg to J. W. West, which was caused by a fall of rock. There had been a dozen props in J. W. West's place when accident occurred, and two dozen cap pieces. To the best of our judgment, the injury was caused by careless-

ness, and the responsibility for said accident rests upon J. W. West, and that the Kansas Shaft Coal and Mining Company is free from all blame.

Made this 30th day of January, 1893.

PETER MCQUADE,
E. C. OVERMAN,
J. T. RUITER.

Witnesses.

March 20, 1893, at Western Coal and Mining Company's shaft mine No. 3, Fleming, Lue Fleece, an Austrian, had both legs broken, in third room, second south. He was in the act of turning a room. The accident happened before my appointment, but, when informed, I examined the place. In my opinion, it was purely accidental. One of those treacherous slips set in, on right-hand rib. By propping, he could not have room to move around at face, and, unexpectedly, a large rock fell, breaking both legs and crippling him for life.

April 5, 1893, at shaft No. 4, Pittsburg & Midway Coal Company, Crawford county, John Bunton and Patrick Logan, miners, met with a serious accident. They were working day work, and in the act of mining coal on roadside of main east, preparing for a double roadway. In widening, or mining, on rib side, one of those treacherous slips was truck. Unexpectedly, a large fall of roof followed, resulting in the breaking of Logan's collar bone and third finger of left hand, and a very bad cut on head. Bunton's injuries consisted of three ribs and collar bone broken and skull fractured. Mr. Bunton was in a dangerous state, as the brain was visible and partly protruding through the fracture of the skull. Both have recovered, but not sufficiently to engage in any laborious work.

In case of accident to Pat. Logan, employed as timberman at No. 4 mine, owned by the Pittsburg & Midway Coal Company, on the 5th day of April, 1893, we, the undersigned, have carefully examined the locality of said accident, and find that the injury consisted of broken collar bone, which was caused by fall of slate in main east entry, while timbering. To the best of our judgment, the injury was caused by unavoidable accident, and the responsibility for said accident rests upon no one, and that the accident was not due to any negligence on the part of the company.

Made this 21st day of April, 1893.

JOS. BISHOP.
WM. BIRD.

In the case of accident to John Bunton, employed as timberman at No. 4 mine, owned by the Pittsburg & Midway Coal Company, on the 5th day of April, 1893, we, the undersigned, have carefully examined the locality of said accident, and find that the injury consisted of fractured skull and broken ribs, which was caused by fall of slate from side of main east entry, while timbering. To the best of our judgment, the injury was accidental, and the responsibility for said accident rests upon no one, and that the accident was not due to any negligence on the part of the company.

Made this 21st day of April, 1893.

THOMAS L. MILLER.
WM. BIRD.
S. HILDERBRAND.
JOS. BISHOP.
SAM. GRINSTEAD.

April 5, 1893, at Western Coal and Mining Company's mine No. 2, Fleming, Alf. Goffeny, a miner, entered his working place in the morning

and fired the gas which had accumulated inside of a "horseback." Unexpectedly his face, neck and hands were burned.

April 21, 1893, in first north, on west side, in room No. 1, Hugh McNeilly, miner and driver, got his leg broken by a fall of rock roof inside a "horseback," while in the act of drilling a hole. Unexpectedly roof gave way. McNeilly is very careful, on most occasions, but this was purely accidental. Accident, 10:30 A. M.; witnesses, Pat. Barry, Geo. Baker, Joe Bradley, Tom Brady. Room examined Saturday, April 21, 1893.

In case of accident to Hugh McNeilly, employed at No. 3 mine owned by the Western Coal and Mining Company, on the 22d day of April, 1893, we, the undersigned, have carefully examined the locality of said accident, and find that the injury consisted of one leg broken, which was caused by a fall of slate. To the best of our judgment, the injury was due to trusting too much to the loose slate; and the responsibility for said accident rests upon the injured man, as he had ample timber in his room.

Made this 24th day of April, 1893.

GEO. W. BAKER.
PAT. BARRY.
WILLIAM UTLEY.

I examined room No. 39, Western Coal and Mining Company's shaft No. 2, Fleming, on fourth south on west side, where Ignos Paulowitz got his right leg broken by a fall of coal which he was in the act of mining, on Friday, April 28, at 11 A. M., and, to the best of my judgment, it was purely accidental. On examination, May 1, 1893, said room was about 50 yards from entry.

In case of accident to Ignos Paulowitz, employed as miner at No. 2 mine, owned by the Western Coal and Mining Company, on the 28th day of April, 1893, we, the undersigned, have carefully examined the locality of said accident, and find that the injury consisted of one leg broken, which was caused by a fall of coal which he was undermining. To the best of our judgment, the injury was such as would or could occur with any miner, in mining off loose coal; and the responsibility for said accident rests upon the injured man, as he had sufficient timber beside him to sprag the coal, if he had been so inclined.

Made this 5th day of May, 1893.

JOHN BULLOOK.
TOZE RAZENEER.
ANTON SKUBIC.

At Yale, May 4, 1893, Wm. Delaney, while in the act of loading a car of coal in room No. 12, mine No. 5, Western Coal and Mining Company, was badly squeezed, or crushed, by a fall of roof. I was not notified by the company. Mr. Delaney, the boy's father, informed me some days after the accident, and claimed it was on account of said room not being properly timbered. Men were employed in this mine to look after timbering, and others employed to load coal, which was mined by machines.

On June 5, Martin McDonald, aged 45 years, was injured in the Home Mining Company's mine, of Leavenworth; nationality, Irish; married; has wife and five children; age of oldest, 14 years, and the youngest, 4 years. His injuries consist of a scalp wound, the right leg broken between the knee and ankle, with right foot crushed and wounded. His injury was caused by the falling of slate from the north side of the main west entry, just at the point where the first south leaves said entry. Mr. McDonald, with Martin Olson, W. H. Mitchell, and J. R. Scott, have for the past

four or five weeks been timbering the main west entry, preparatory for double track, and had on the morning that the accident happened reached the first south.

I thought best, in order to make you a complete report, to have those working with Mr. McDonald make a statement, which I inclose to you as a part of this report. These three men were the witnesses present when the accident happened.

G. W. KERSTEADD, *Superintendent*.

June 14, 1893, John Davis tried to slide down the winding rope in an airshaft which was being sunk near the Davis shaft mine, Cherokee. He fell to the bottom, a distance of 40 feet, resulting in a fractured foot and bodily injuries, which laid him up for a few months.

On June 26, 1893, Oscar Barnett, a helper employed by Tom Burgess, miner, had his right arm broken below the elbow while in the act of trying to mine a standing shot. A piece of roof slate, weighing about 100 pounds, fell on him, breaking his arm. Not being a practical miner, there was no one to blame except Tom Burgess, who had him hired as a laborer. I was not notified of this accident until I was going the rounds of examination. Information by J. C. Sandefer.

At Leavenworth Coal Company's mine, August 14, 1893, while working around and oiling the electric pump near the bottom of shaft, James Graham lost forefinger of right hand. He was working around the pump piston, which caught his hand, with the above result.

August 15, 1893, Sylvester Kensor, employed at Arnott & Lanyon's coal works, met with an accident, by which he sustained a compound fracture of the left leg. He was working in the entry at the time, and the driver had started out with a string of cars. During this trip the two rear cars became uncoupled and, being on an incline, started back towards the entry, striking Kensor, with the above result. He was taken to his home, in Chaplin's addition, and Doctor Fisher called, who reduced the fracture.

August 20, 1893, at the Kansas & Texas Company's mine No. 37, Litchfield, S. G. Sigman, a shot firer, received a severe scorching around face, hands, and neck. The flames of the shot went back in the entry further than expected.

August 24, 1893, at mine No. 37, Kansas & Texas Company, Litchfield, Sherman Dotts, a negro, got caught while crossing under the descending cage.

August 25, 1893, M. B. Ferguson, who had been doing duty as pit boss for some time, accidentally fell down the shaft, and did himself considerable damage. His chest was crushed and several ribs broken, and for a time it looked as if he had been killed. He was taken to his home, put under the care of a surgeon, and began to improve. Mr. Ferguson had recently purchased a half interest in the mine, and it is probable that his not being familiar with the work led to the accident.

September 7, 1893. The following is the report made to this office of Fois Emery's injuries. Emery is one of the negroes imported from Ala-

bama to take the place of the white miners at No. 4, Durkee's, better known as Schwab's mine.

In case of accident to Fois Emery (colored), employed as a miner at No. 4 mine leased by the J. H. Durkee Coal Company, on the 7th day of September, 1893, I, the undersigned, have carefully examined the locality of said accident, and find that the injury consisted of a broken leg, which was caused by a fall of rock. To the best of my judgment, the injury was accidental, and the responsibility for said accident rests upon no one.

RICHARD ANDERSON.

Made this 8th day of September, 1893.

September 30, 1893, at Western Coal & Mining Company's mine No. 5, Yale, Mark Perry, employed as a laborer, received a bad cut on the head, while in the act of loading a car of coal. It was caused by a fall of roof rock, which was not properly timbered.

October 5, 1893, Charles Martin received a bad cut on the head. He was in the act of crossing the bottom of the shaft, in search of picks, when a piece of timber, 2x4, fell down from the top, striking him on the head. Mr. Rooth, the operator, was doing some carpenter work on pit top; the piece referred to fell out of his hands accidentally.

On the evening of October 20, 1893, James McGregor, employed as a miner at mine No. 4, Chicopee, was detailed by Wm. O'Connor, mine boss, to act as shot firer, in the absence of one of the regular shot firers. Between the hours of 7 and 8 o'clock P. M., while in the act of tamping a hole in first west entry on south side, the charge of powder then in the hole, with about nine inches of tamping, exploded. McGregor is a practical man, both in mining and shot firing. He claims he had 9 or 10 inches of tamping on the powder, and was ramming or tamping when the charge of about 2 feet 10 inches, on a common-sized cartridge pin, exploded. The result of the injuries received has not, as yet, terminated in death. He has lost both eyes, right arm shattered and powerless, and right breast burned to bone. In addition to all this, his face, neck, body and arms were burned, and small particles of coal were shot into the flesh of his face, neck, breast, and arms. McGregor is a married man, whose days of usefulness to his family are of the past. I earnestly hope our mining laws will be so amended that our disabled miners will receive at least compensation enough to keep their families from starving. It is evidenced by the fact referred to, that the miner very often, at the risk and peril of his life, performs work that none but those accustomed to their calling are conversant with. This is the same James McGregor referred to who got shot in this same mine when going back on a miss shot, as he thought, on September 30, 1891.

October 31, 1893, at Peter Graham's mine, Quincy Adams, a miner, while in the act of mining a standing shot, received a severe crush. A lump of coal, weighing over a ton, rolled over upon him. I happened to be inspecting the mine on the same day.

November 2, 1893, at Kanas & Texas Coal Company's mine No. 37,

Litchfield, Crawford county, Emelius Seig, a miner, received internal injuries by a fall of slate in room No. 42, in first south on west. A slip inside of a horseback in the roof was the cause.

Saturday, November 4, 1893, Peter Luppín, a driver, employed on the above date filling a break-through in first east on north, at room No. 1, had his leg broken, and received other bodily injuries by the falling of a rock, measuring 7 feet 6 inches in length, about 7 feet in width, and about 8 inches in thickness. There was no one to blame, as he pulled out the building, or "gob," on which the point of the rock was resting. I visited the place the following morning. It was caused by carelessness.

November 2, 1893, at mine No. 1, Frontenac, John Kittos, a miner, had his leg broken by a fall of coal in his room, in third south on east side.

On December 2, Joe Longcake received a severe bruise on leg. A piece of rock of about 300 or 400 pounds fell upon him, while in the act of mining off his second shot in opening up a new room in first north (or south) on east side. There were no bones broken. I visited the place, and I must admit it was negligence on the part of Longcake in not taking it down, as it was partly shot off in the brushing of the entry.

At the Cherokee & Pittsburg Coal Company's mine No. 2, Frontenac, Kas., on Friday, December 8, at about 10:30 p. m., David Purdon and Grant McBroom narrowly escaped being killed. While firing shots in seventh south on west, the gas lighted in the needle hole. They did not have time to get out of the way before the shot went off. A piece of coal struck Purdon on the right leg above the ankle, making an ugly hole, and tearing the flesh off the bone. I was not notified by the company; did not know anything about the accident until December 24, 1893.

December 14, 1893, at mine No. 2, Frontenac, Thomas Phillips, a driver, had his foot caught between two cars. He claimed it was the fault of the trapper boy signaling that the road was clear when there were empty cars ahead on the track, and he dashed into them. The hook of the tail chain went through his foot.

At the Cherokee & Pittsburg Coal and Mining Company's mine No. 2, Frontenac, Crawford county, on Wednesday night, December 20, 1893, Ed. Pezze, an Austrian, and Grul Trucno, an Italian, were engaged as shot firers on west side, and when firing shots in fifth south on west a terrific explosion took place, hurling them to the ground, and burning their faces and hands severely. The shock of the explosion was felt on top by the night watchman. He notified parties, who went to the rescue of the shot firers. Both of them were taken in a cart to their homes, and William Reynolds, pit boss, and Peter McCall, top boss, went after Frank O'Neal and Ed. Erwin, regular shot firers, who had completed their work on the east side of mine No. 2 on the same night, and were home, not knowing that anything had happened to those shot firers on west side of the mine. However, more for obligation than anything else, O'Neal and Erwin went back

to mine No. 2 to finish up, or, at least, to fire the rest of the shots on west side; consequently they were highly rewarded. About 2:30 on Thursday morning, while firing in the eighth south on west, an explosion took place, dashing both of them to the ground. O'Neal's face, neck and hands were badly burned. Erwin happened to be more fortunate, as his injuries were not so serious. O'Neal, who is a practical miner and shot firer, also states, to the best of his opinion, that if those places were sprinkled regularly there would be no real danger as to explosions. Ed. Pezze positively swears it was natural gas that caused the explosion in the fifth south. I was not notified by the company in reference to the explosion, which is part of their duty, according to the mining laws of the state. However, being absent from home, when I returned on December 27, I went to Frontenac to make an investigation. I visited those shot firers who got burned, and got their statements. I also went to mine No. 2 and saw Mr. Reynolds, the pit boss, and heard what he had to say in reference to the explosion. Mr. Reynolds claims it was powder smoke that caused the explosion in fifth south on west.

While on my official rounds of inspection at mine No. 2, some time ago, I gave Mr. Reynolds strict orders to have those dry places sprinkled continually, both in rooms and entries, and he promised to comply, as he, Mr. Reynolds, satisfied himself in my presence that coal dust was a very dangerous element, notwithstanding the gas that may generate from time to time. I also wrote a letter to Superintendent Wilson, calling his attention to the necessity of having those dry and dusty rooms and entries watered. Be it remembered—and it will be by many—that this is the mine that exploded on Friday, November 9, 1888, at about 5 P. M., killing 43 miners, and leaving many fathers and mothers, widows and orphans to mourn. Since that time, it has been discussed among men of both practice and theory, as to the real cause of the explosion. Many differ materially in their opinions.

When I asked Mr. Reynolds the reason he did not notify me, he had no excuse to offer, only that he intended to do so, and this was seven days after the explosion occurred. I knew nothing about it, until I read an account of it in the Kansas City papers. Mr. Reynolds, the mine boss, did not go into the places the following day to ascertain whether it was caused by a windy shot or not, but said, in his opinion, it was the powder smoke which ignited and caused the explosion. In my opinion, it was coal dust, and, probably, a little gas, but particularly dust. It is becoming evident that coal dust is a dangerous element, and sprinkling should be oftener resorted to. I am unable to give the date or particulars of the other nonfatal accidents mentioned. The coal companies merely mentioned such accidents when making their annual report to this office for the year 1893.

Chapter 66, paragraph 3856, section 30, of the mining laws, reads as follows:

Loss of Life, or Injury. SEC. 30. Whenever, by reason of any explosion or other accident, in any coal mine, or the machinery connected therewith, loss of life, or serious personal injury, shall occur, it shall be the duty of the person having charge

of such coal mine to give notice thereof forthwith to the Inspector, and if any person is killed thereby, to the coroner of the county, who shall give due notice of the inquest to be held. It shall be the duty of the Inspector, upon being notified as herein provided, to immediately repair to the scene of the accident, and make such suggestions as may appear necessary to secure the future safety of the men; and if the results of the explosion do not require an investigation by the coroner, he shall proceed to investigate and ascertain the cause of the explosion or accident, and make a record thereof, which he shall file as provided for; and to enable him to make the investigation, he shall have power to compel the attendance of persons to testify, and to administer oaths or affirmations. The costs of such investigation shall be paid by the county in which the accident occurred, in the same manner as costs of inquests held by the coroner or justices of the peace are paid.

Such a law is a dead letter, having no penalty for the violation thereof, leaving it optional to the operators whether they report or not. (See recommendations.)

CERTIFICATES OF INSPECTION.

Certificates of steam-boiler inspection were filed in this office last year as follows:

I hereby certify that the boiler used by Wm. Hamilton, at shaft No. 1, in Cherokee county, was examined and inspected on the 7th day of January, 1893, and found in good condition, and tested at 80 pounds to the square inch, cold-water pressure.

JAS. HAMILTON.

I hereby certify that the two boilers used by the Kansas & Texas Coal Company at their shaft No. 18, Weir, Kas., were examined and inspected on the 16th day of June, 1893, and found in good condition, and safe at a pressure of 80 pounds.

S. J. WEAVER, *Inspector*.

I hereby certify that the boiler used by the Kansas & Texas Coal Company at their shaft No. 47, Weir, Kas., was examined and inspected on the 16th day of June, 1893, and found in good condition, and safe at a working pressure of 80 pounds.

S. J. WEAVER, *Inspector*.

I hereby certify that the boiler used by the J. H. Durkee Coal Company at their shaft No. 1, at Weir, was examined and inspected on the 6th day of July, 1893, and found in good condition; working pressure, 60 pounds.

DAVID JOHNSON, *Engineer*.

I hereby certify that the boiler used by J. H. Durkee Coal Company at their shaft No. 3, Scammon, Cherokee county, was examined and inspected on the 6th day of July, 1893, and found in good condition. Working pressure, 60 pounds.

DAVID JOHNSON, *Engineer*.

I hereby certify that the boiler used by Central Coal and Coke Company at their shaft No. 8, Weir, Cherokee county, was examined and inspected on the 8th day of July, 1893, and found in good condition. Pressure per square inch, 110 pounds.

HENRY HEWENGER.

I hereby certify that the boiler used by Central Coal and Coke Company at their shaft No. 5, Weir, Cherokee county, was examined and inspected on the 15th day of July, 1893, and found in good condition. Pressure per square inch, 110 pounds.

JOHN T. SCOTT.

I hereby certify that the boiler used by Central Coal and Coke Company at their shaft No. 6, Weir, Cherokee county, was examined and inspected on the 15th day of July, 1893, and found in good condition. Pressure per square inch, 110 pounds.

ALEX. NEVIN.

I hereby certify that the boiler used by Central Coal and Coke Company at their shaft No. 7, Scammon, Cherokee county, was examined and inspected on the 14th and 22d days of July, 1893, and found in good condition. Pressure per square inch, 110 pounds.

I. B. GRANT.

I hereby certify that the boiler used by Central Coal and Coke Company at their shaft No. 4, Scammon, Cherokee county, was examined and inspected on the 22d day of July, 1893, and found in good condition. Pressure per square inch, 110 pounds.

D. H. COLVIN.

I hereby certify that the boiler used by the Columbus Coal Company at shaft No. 2, Stippville, was examined and inspected on the 9th day of September, 1893, and found in good condition, and pressure 80 to 90 pounds, and safe at 130 pounds.

WM. M. WINN, *Engineer*.

I hereby certify that the boiler used by the Central Coal Company at its shaft Daisy was examined and inspected on the 24th day of December, 1893, and found in good condition; pressure, 120 pounds; working pressure, 50 to 60 pounds.

JOHN BROWN, *Engineer*.

I hereby certify that the two boilers used by the Wear Coal Company at shaft mine No. 2, Pittsburg, were examined and inspected on the 5th day of July, 1893, and found in good condition; pressure, 100 pounds.

EDW. SULLIVAN, *Inspector*.

The Hartford Steam Boiler Inspection and Insurance Company make the following report of the condition of the Western Coal and Mining Company's steam boilers, inspected on the 5th and 6th of July, 1893: Mine No. 2, three boilers; mine No. 3, two boilers. I examined the above boilers by the "hammer test," and report them in good condition.

EDW. SULLIVAN, *Inspector*.

The Hartford Steam Boiler Inspection and Insurance Company make the following report of the condition of the Western Coal and Mining Company's steam boilers, inspected on the 29th of July: Mine No. 4, one boiler; mine No. 5, three boilers; mine No. 6, two boilers. I examined the above boilers by the "hammer test," and report them in good condition.

EDW. SULLIVAN, *Inspector*.

I hereby certify that the boiler used by the Minard Coal Company at their shaft located northeast of Pittsburg, was examined and inspected on the 22d day of July, 1893, and found in good condition and safe at 100 pounds pressure.

N. W. HENDERSON.

I hereby certify that the boilers used by the Cherokee & Pittsburg Coal and Mining Company at shaft No. 4, located at Chicopee (has three boilers), were examined and inspected on the 1st day of August, 1893, and found in good condition. Two of the boilers carry 80 pounds, and one carries 100 pounds pressure.

N. W. HENDERSON.

I hereby certify that the boilers used by the Cherokee & Pittsburg Coal and Mining Company at shaft No. 1, located at Frontenac (has three boilers), were examined and inspected on the 2d day of August, 1893, and found in good condition. Tested at 100 pounds, cold-water pressure, and carry 80 pounds when working.

N. W. HENDERSON.

I hereby certify that the boiler used by the Cherokee & Pittsburg Coal and Mining Company at their shaft No. 2, located at Frontenac, was examined and inspected on the 3d day of August, 1893, and found in good condition. Test pressure, 100 pounds, and when working, 80 pounds.

N. W. HENDERSON.

I hereby certify that the two boilers used by the Pittsburg & Midway Coal Company at their shaft No. 4 were examined and inspected on the 3d day of August, 1893, and found in first-class condition in every respect, and carrying 80 pounds to the square inch.

THOS. McNALLY.

Kansas & Texas Coal Company:

I have certificate of inspection from the Union Casualty and Surety Company for the following boilers in your charge: Boilers Nos. 1 and 2 at mine No. 20: Condition good; safe at a working pressure of 90 pounds, which pressure must not be exceeded. Boiler No. 1 at mine No. 37: Condition is good, and safe at a working pressure of 80 pounds, which pressure must not be exceeded. Boiler No. 1 at mine No. 17: Condition good; safe at a working pressure of 85 pounds, which pressure

must not be exceeded. Boiler No. 1 at mine No. 22: Condition good; safe at a working pressure of 85 pounds, which pressure must not be exceeded. Boiler No. 2 at mine No. 22: This boiler is badly pitted on bottom, and a pressure of 35 pounds must not be exceeded.

F. W. BOND, *Chief Engineer.*

I hereby certify that the two boilers used by the Kansas & Texas Coal Company at their shaft No. 20, Pittsburg, Kas., were examined and inspected on the 16th day of June, 1893, and found in good condition, and safe at a pressure of 90 pounds.

S. J. WEAVER, *Inspector.*

I hereby certify that the two boilers used by the Kansas & Texas Coal Company at their shaft No. 22, Litchfield, Kas., were examined and inspected on the 15th day of June, 1893, and found in fair condition: No. 1 safe at a pressure of 85 pounds; No. 2 safe at a pressure of 30 pounds.

S. J. WEAVER, *Inspector.*

I hereby certify that the two boilers used by the Kansas & Texas Coal Company at their shaft No. 23, Weir, Kas., were examined and inspected on the 16th day of June, 1893, and found in fair condition, and safe at a pressure of 80 pounds.

S. J. WEAVER, *Inspector.*

I hereby certify that the boiler used by the Kansas & Texas Coal Company at their shaft 37, Litchfield, was examined and inspected on the 15th day of June, 1893, and found in a good condition, and safe at a pressure of 80 pounds.

S. J. WEAVER, *Inspector.*

I hereby certify that the boiler used by J. H. Durkee Coal Company at their shaft No. 4 was examined and inspected on the 1st day of October, 1893, and found clean and in good condition, and used under 80 pounds pressure.

J. G. SCHWAB.

I hereby certify that the boiler used by the Home Mining Company at their shaft was examined and inspected on the 25th day of June, 1893, and found O. K.—good condition.

ARMOUR ROBISON, *Engineer.*

I hereby certify that the four boilers used by the Kansas & Texas Coal Company, at the shaft, Leavenworth, were examined and inspected on the 10th day of June, 1893, and found in good condition, and safe at a pressure of 90 pounds.

S. J. WEAVER, *Inspector.*

I hereby certify that the boilers used by the Penitentiary coal mine, at the shaft at Lansing, were examined and inspected on the 10th day of July, 1893, and found in good condition, carrying 75 pounds of steam.

OSCAR F. LAMM,

Superintendent of Mine.

I hereby certify that the boilers used by the Leavenworth Coal Company at their shaft in Leavenworth were examined and inspected on the 28th day of August, 1893, and found them in good condition.

JOSEPH NEWSOME.

I hereby certify that the boiler used by Wm. J. Thurwell & Co. at their shaft at Pleasanton, Linn county, was examined and inspected on the 29th day of October, 1893, and found in good condition.

J. F. CONNOLLY.

I hereby certify that the boiler used by the Mine Creek Coal Company at their shaft No. 1 was examined and inspected on the 13th day of August, 1893, and found in excellent condition. Pressure made, 115 pounds; carry 90 pounds.

S. N. SHINING, *Superintendent.*

I hereby certify that I have examined the boiler used by the Bellville Coal Company at their shaft at Scranton, and found it in good condition, with safety valve, blow-off and gauge cocks all clear and in good working order.

JOHN BUNTEN, *Engineer.*

RECORD OF MAPS AND PLANS.

The following maps and plans of mines were received at this office during the year 1893:

No. 1. Central Coal and Coke Company's mine No. 4, Scammon, Cherokee county; survey and plat made, June, 1893; does not show direction of air current.

No. 2. Central Coal and Coke Company's mine No. 7, Cherokee county; survey and plat made, June, 1893; entries not numbered; air course not shown.

No. 3. Superior Coal and Mining Company's mine No. 4, Osage county; survey and plat made, June, 1889; extended, June, 1893.

No. 4. Superior Coal and Mining Company's mine No. 5, Osage county; survey and plat made, June, 1886; extended, June, 1893.

No. 5. Wayland & Ryan's drift, Osage county; survey and plat made, September 1, 1891; extended, June 8, 1893.

No. 6. John Hershey's, Osage county; survey and plat made, December, 1889; extended, June 6, 1893.

No. 7. C. C. L. & O. Co., Osage county; survey and plat made, July, 1890; extended, June 7, 1893.

No. 8. Mathew Waddell, Osage county; survey and plat made, December, 1889; extended, June, 1893.

No. 9. Central Coal and Coke Company's mine No. 6, Cherokee county; survey and plat made, July, 1893.

No. 10. Central Coal and Coke Company's mine No. 8, Cherokee county; survey and plat made, July, 1893.

No. 11. Western Coal and Mining Company's mine No. 2, Crawford county; survey and plat made, July, 1893.

No. 12. Western Coal and Mining Company's mine No. 3, Crawford county; survey and plat made, July, 1893.

No. 13. Western Coal and Mining Company's mine No. 4, Crawford county; survey and plat made, July, 1893.

No. 14. Western Coal and Mining Company's mine No. 5, Crawford county; survey and plat made, July, 1893.

No. 15. Wear Coal Company's Mine No. 2, Crawford county; survey and plat made, July, 1893.

No. 16. Central Coal and Coke Company's mine No. 5, Cherokee county; survey and plat made, July, 1893; does not show number of entry or course of air.

No. 17. Cherokee & Pittsburg Coal and Mining Company's mine No. 4, Crawford county; survey and plat made, July, 1893.

No. 18. Cherokee & Pittsburg Coal and Mining Company's mine No. 1, Crawford county; survey and plat made, July, 1893.

No. 19. Minard & Co., now known as No. 5, Wear Coal Company, Crawford county; date of survey not marked.

No. 20. Kansas & Texas Coal Company's mine No. 20, Crawford county; survey and plat made, May, 1893.

No. 21. Kansas & Texas Coal Company's mine No. 22, Crawford county; survey and plat made, April, 1893.

No. 22. Kansas & Texas Coal Company's mine No. 37, Crawford county; survey and plat made, April, 1893.

No. 23. Arnott & Lanyon Coal Company, Crawford county; survey and plat made, April, 1893.

No. 24. Kansas & Texas Coal Company's mine No. 34, Leavenworth county; survey and plat made, July, 1893.

No. 25. Leavenworth Coal Company, Leavenworth county; survey and plat made, August, 1893.

No. 26. Home Mining Company, Leavenworth county; survey and plat made, April 8, 1893.

No. 27. Kansas & Texas Coal Company's mine No. 18, Cherokee county; survey and plat made, June, 1893.

No. 28. Kansas & Texas Coal Company's mine No. 23, Cherokee county; survey and plat made, June, 1893.

No. 29. Henry Isaacs, Osage county; survey and plat made, June, 1893.

No. 30. Thomas Chappel, Osage county; survey and plat made, May, 1893.

No. 31. William Thomas, Osage county; survey and plat made, June, 1893.

No. 32. Industrial Coal and Mining Company, Osage county; survey and plat made, June, 1893.

No. 33. Central Coal and Mining Company, Osage county; survey and plat made, June, 1893.

No. 34. Ryan & McCoy, Osage county; survey and plat made, May, 1893.

No. 35. Western Fuel Company's mine No. 1, Osage county; survey and plat made, April, 1893.

No. 36. Western Fuel Company's mine No. 2, Osage county; survey and plat made, April, 1893.

No. 37. Western Fuel Company's mine No. 3, Osage county; survey and plat made, April, 1893.

No. 38. Ingham Coal Company, Osage county; survey and plat made, May, 1893.

No. 39. Henry Isaacs' No. 5, Osage county; survey and plat made, May, 1893.

No. 40. State mine, Leavenworth county; survey and plat made, September, 1893.

No. 41. Pittsburg & Midway Coal Company, Crawford county; survey and plat made, September, 1893.

No. 42. Mine Creek Coal Company, Linn county; does not show when survey was made.

No. 43. Wear Bros.' No. 2, Cherokee county; does not show date of survey.

No. 44. Central Coal Company, operated by J. Dennis, receiver, Cherokee county; does not show date of survey; have reason to believe it is not accurate.

No. 45. Weir City Coal Company's No. 5, Cherokee county; does not show date of survey.

No. 46. Durkee Coal Company's mine No. 2, Crawford county; survey and plat made, December, 1893.

No. 47. Carbon Coal Company's No. 22, Osage county; survey and plat made, November, 1893.

No. 48. Carbon Coal Company's No. 25, Osage county; survey and plat made, November, 1893.

No. 49. Carbon Coal Company's mines Nos. 9, 19, 20, and 24, Osage county; surveys and plats made, November, 1893.

No. 50. Scandinavian Coal and Mining Company, Osage county; survey and plat made, November, 1893.

No. 51. Osage Carbon Company, Osage county; survey and plat made, November, 1893.

No. 52. Hamilton & Braidwood, Cherokee county; survey and plat made, August, 1893.

No. 53. Carbon Coal Company's mine No. 23, Osage county; survey and plat made, November, 1893.

No. 54. Carbon Coal Company's mine No. 26, Osage county; survey and plat made, November, 1893.

No. 55. Carbon Coal Company's mine No. 10, Osage county; survey and plat made, November, 1893.

No. 56. Home Mining Company, Leavenworth county; survey and plat made, April, 1893.

STRIKES.

In dealing with the subject of strikes, I aim to give the details in as short, clear and concise a manner as possible. A volume of itself could be written on this subject, if dates, meetings, conferences, etc., were given. Therefore, the limitation of means by which this office is governed will not permit me to treat the subject as elaborately as it should be, in all its details. A thorough review of the subject is, therefore, obviated, only giving a general explanation of the cause, duration, effect and final adjustment of the strike or suspension.

For the last 12 years that I know of, miners of Cherokee and Crawford counties have been agitating, advocating and demanding of the legislators of Kansas a law by which the coal should be weighed before being screened. Every representative elected to the legislature from the coal-mining districts in Cherokee, Crawford and Leavenworth counties has been instructed and implored to advocate and champion a measure which 95 per cent. of the miners in said counties claimed they wanted, viz., the weighing of coal before screening, and the enactment of a weekly-pay law.

Organized bodies of miners, and particularly those belonging to the Knights of Labor, contributed their mite and support of such measures. Meetings, both public and private, were held, discussing its merits and the advisability of immediate action to that end, as the miners believed the operators were making encroachments, by applying means and methods by which the miners' output of coal seemed to decrease and lessen in value, through and by the continuation of changing screens, deducting a larger per cent., through the various means of screening and dumping. The miners believed that no other remedy could be applied by which this much-talked-of and long-looked-for measure could be secured except through legislative enactment. They selected lobbyists, and paid them, to attend the sessions of the legislature in advocacy of the anti-screen and weekly-pay laws.

The candidates for representative, in the past years, who were elected from the coal-mining districts renewed their promises in behalf of the aforesaid measures, but when they went to Topeka they ignored their promises and the demands made by the miners of Cherokee, Crawford, and Leavenworth counties. The miners did not relinquish their battle in despair, but renewed their action, by concentrating their forces together through the ballot, electing representatives from among their ranks—changing the complexion of the government—through which they received the considerations due them. These considerations they had long and earnestly re-

quested and demanded from those in power in the past, but their requests and demands were all in vain until a government of reform granted a redress, and gave to the miners two of the most essential and important laws in which they were interested, viz., the weekly-pay law, and a law regulating the screening of coal, commonly called the anti-screen law, which reads as follows:

AN ACT to regulate the weighing of coal at the mine.

[Session Laws of 1893, ch. 188, p. 271.]

SECTION.

1. Screen.
2. Weighman.
3. Miners can employ check weighman.

SECTION.

4. Scales.
5. Annulment of this act void.
6. Shall apply to all workers.

Screen. SECTION 1. It shall be unlawful for any mine owner, lessee or operator of coal mines in this state, employing miners at bushel or ton rates, or other quantity, to pass the output of coal mines by said miners over any screen or other device which shall take any part from the value thereof before the same shall have been weighed and duly credited to the employés and accounted for at the legal rate of weights as fixed by the laws of Kansas.

Weighman. SEC. 2. The weighman employed at any mine shall subscribe an oath or affirmation, before a justice of the peace or other officer authorized to administer oaths, to do justice between employer and employé, and to weigh the output of coal from mines in accordance with the provisions of section 1 of this act. Said oath or affirmation shall be kept conspicuously posted in the weigh office, and any weigher of coal, or persons so employed, who shall knowingly violate any of the provisions of this act shall be deemed guilty of a misdemeanor, and, upon conviction, shall be punished by a fine of not less than \$25 nor more than \$100 for each offense, or by imprisonment in the county jail for a period not to exceed 30 days, or by both such fine and imprisonment.

Miners can Employ Check Weighman. SEC. 3. The miners employed by or engaged in working for any mine owner, operator or lessee in this state shall have the privilege, if they so desire, of employing at their own expense a check weighman, who shall have like rights and privileges in the weighing of coal as the regular weighman, and be subject to the same oath and penalties as the regular weighman.

Scales. SEC. 4. Any person or persons having or using any scale or scales for the purpose of weighing the output of coal at mines, so arranged or constructed that fraudulent weighing may be done thereby, or who shall knowingly resort to or employ any means whatever, by reason of which such coal is not correctly weighed and reported in accordance with the provisions of this act, shall be deemed guilty of a misdemeanor, and shall, upon conviction, for each offense be punished by a fine of not less than \$200 nor more than \$500, or by imprisonment in the county jail for a period not to exceed 60 days, or by both such fine and imprisonment.

Annulment of this Act Void. SEC. 5. Any provisions, contract or agreement between mine owners or operators thereof and the miners employed therein, whereby the provisions of section 1 of this act are waived, modified, or annulled, shall be void and of no effect; and the coal sent to the surface shall be accepted or rejected, and if accepted shall be weighed in accordance with the provisions of this act; and right of action shall not be invalidated by reason of any contract or agreement.

Shall Apply to all Workers. SEC. 6. The provisions of this act shall also apply to the class of workers in mines known as loaders, engaged in mines wherein mining is done by machinery. Whenever the workmen are under contract to load coal by the bushel, ton, or any quantity the settlement of which is had by weight, the output shall be weighed in accordance with the provisions of this act.

The anti-screen bill was approved by the governor March 13, 1893, and was to take effect September 1, of the same year. The operators of Cherokee and Crawford counties, seemingly in their appreciation and willingness of such a measure, substituted an amendment, by which the law would be effective three months prior to the time prescribed by the act, viz., September 1, 1893; and, in their pretended eagerness to comply, posted notices at their various mines about the beginning of May, 1893, stating that the price for mining unscreened coal would be 47 cents per ton in summer months, and 53 cents per ton in winter months. This, the miners claimed, was not equivalent to the old ratio of $3\frac{1}{2}$ cents per bushel in summer, and 4 cents per bushel in winter, for screened coal. Local meetings were held at almost every mine in the district, resulting in a delegate convention, held in Pittsburg, May —, 1893, at which it was unanimously agreed to suspend operation until a conference of mine operators, or their agents, and representatives of the miners would meet, in hopes that the impending trouble could be adjusted.

In response to this agreement, representatives of both the miners and operators met in Pittsburg, ———, 1893. A settlement was not effected, however, as the miners claimed that 57 cents per ton in summer and 70 cents per ton in winter, for unscreened coal, was justly due them; or, in other words, they wanted the Missouri price, formerly paid for unscreened coal in parts of Kansas. This the operators positively declined to give, claiming that 47 and 53 cents per ton for unscreened coal was equivalent to $3\frac{1}{2}$ and 4 cents per bushel for screened coal. Several meetings were called, and the matter thoroughly discussed, all of which proved of no avail to assist them in their efforts.

The miners of Cherokee and Crawford counties directed M. L. Walters to go to Osage and Leavenworth counties and present their claims to the miners. This he agreed to, proceeding to Leavenworth, at which place a meeting of the Leavenworth miners was held in the courthouse on May 29, 1893. The situation of the Cherokee and Crawford county miners was the subject of discussion, and the miners of Leavenworth unanimously agreed, by vote, to suspend operation, in sympathy, giving, as a reason, that their brother miners in Cherokee and Crawford counties could not accomplish their desired object as long as the Leavenworth miners assisted in supplying the coal markets of Kansas.

The suspension did not cease at this point, as the miners of Osage county claimed to be as sympathetic as the Leavenworth miners, and, to encourage their brother miners of Cherokee and Crawford counties in their undertaking, suspended mining from June 7 to August 21, 1893. The suspension of the Osage county miners is more fully explained on another page.

The gloomy aspect of the strike or suspension seemed to prevail in many departments not directly connected with the mining industry, and was considered the general topic of discussion by many who had no relation to the

subject. The suspension became more general in all mining districts in the state, although several mines were resuming operation with but a few men. Both operators and miners were determined in the accomplishment of their desired objects.

The miners selected committees from among their ranks, who labored unceasingly, in the farming districts, to secure contributions and supplies, such as flour, meat, etc., which was distributed among the most needy of their craft, in proportion to their families and circumstances. Financial aid, from many departments, were forwarded to the miners' headquarters at Pittsburg, and sympathetic business men contributed freely to the miners' needs, one of whom gave \$100. The venerable, hoary-headed form of this benevolent contributor is discernible in Pittsburg, in the person of "Uncle" Halliday.

Some of the coal companies of Cherokee, Crawford and Leavenworth counties, realizing the enormous loss sustained by the prolonged and seemingly inevitable suspension, offered the miners of Cherokee and Crawford counties 50 cents per ton, which was refused. Following soon after was another offer of 54 cents per ton for unscreened coal, which was also repudiated by the miners.

The Kansas & Texas, Central Coal and Coke, and Durkee Coal companies, in their desire to operate their mines, imported the colored brethren from many parts of the country, but particularly from Alabama, placed them securely inside of stockades, and supplied them with arms and ammunition, in addition to their bodyguards, some of whom were notorious characters, and foreign to Kansas.

Dissatisfaction prevailed all over the district. Miners became impatient when notified by some of the companies to vacate the houses in which they lived, as the negroes were supposed to permanently inhabit them in the future. A crisis was evidently approaching, and there seemed to be no available redress, when a proposition by C. J. Devlin, manager of the coal property of the "Santa Fé," was submitted, in appreciation of which a convention was called, to either accept or reject the proposition. Following are the proceedings of the convention:

PITTSBURG, KAS., August 15, 1893.

Convention called to order by President Walters. The first business of the convention was the appointing of the several committees, but at 1:30 the real business of the convention commenced, and the motion passed that all miners who were not delegates be allowed a seat but not a vote. The different committees were then appointed by President Walters, as follows:

Committee on credentials—Robt. Abbott, of Weir City; George Bousfield, of Midway; Hugh Forsyth, of Frontenac.

Committee on resolutions and order of business—Patrick Welsh, of Cornell; Robt. Gilmore, of Scammon; Thos. Gorman, of Fleming.

Committee on permanent organization—James White, of Weir City; John Grant, of Scammon; A. K. Stevenson, of Chicopee; John Wykle, of Litchfield; E. B. Edwards, of Yale.

A recess of about 15 minutes was then taken, to allow the committees time to draft resolutions and prepare reports. After recess, the committee on permanent organization reported, as follows:

We, your committee on permanent organization, submit the following: That M. L. Walters act as president of this convention, and J. M. Lacy act as secretary.

Robert Abbott was appointed assistant secretary.

The committee on credentials then reported, as follows:

We, the committee on credentials, find the following delegates entitled to seats in the convention:

Kirkwood No. 2, George McGrath and E. M. Horchaes.

Cornell, Patrick Welsh.

Frontenac, H. Forayth and C. H. Friskel.

Litchfield, Nos. 22 and 37, John Wykle and Branz Martin.

Minden mines, James McManus.

Chicopee, J. K. Stevenson and Peter Sherman.

Morgan Lee shaft, William James.

Arnott & Lanyon, Hector McGinnis and Henry Turner.

Midway No. 4, Sam Britton and George Bousfield.

Fleming No. 2, Robert Beveridge.

Fleming No. 3, Thomas Gorman.

Yale, Walter Waldie and Edward Edwards.

Pittsburg No. 20, Fred. Teller.

Minard & Co., B. Dueber.

Scammon, Durkee's, Wm. Grady.

Graham's, John Grant.

No. 4, J. G. McLaughlin.

No. 7, R. Gilmore.

Hamilton No. 1, Weir City, William Ridly and James White.

Wear Bros. No. 2, P. K. Stevens and Pearl Sweeney.

Excelsior, U. S. Paxton.

Bennett slope, W. Sinclair.

Keith & Perry No. 8, Robert Abbott and John Lavery.

Durkee Nos. 1 and 2, William Davis and William Gowns.

Keith & Perry No. 6, Thomas Horsley and David White.

Kansas & Texas No. 18, Albert Gladinour and William Bevans.

Kansas & Texas No. 47, Thomas Coulson.

Keith & Perry No. 5, G. R. Fulton and J. Price.

Stippville, Thomas Skeen.

Each delegate was requested to announce the number of men he represented, and state his instructions.

The proposition of C. J. Devlin was then taken up and freely discussed, each delegate giving his opinion.

The motion to either accept or reject the proposition was then brought before the convention.

After a vote, a majority was found in favor of accepting the proposition.

The vote stood 2,318 for, and 927 against; 45 for 57 and 70 cents per ton, and 400 for 60 cents yearly basis; 75 who were present with discretionary power were not counted in the vote.

After the vote was taken, a committee was appointed to draft resolutions, after which an adjournment was taken until 7:30 o'clock.

The committee then held a meeting and drafted the Devlin proposition out in full:

That the minimum price per ton for rough and tumble coal shall not be less than 50 cents, and 5 cents per 100 pounds screened coal shall be paid for each additional 100 pounds over 50 per cent. Example: 1,100 pounds, 55 cents; 1,200 pounds, 60 cents; 1,600 pounds, 80 cents; 2,000 pounds, \$1.00; and that the men have a check weighman, his money to be stopped by the company, and the pit committee be allowed the privilege of examining the scales when deemed necessary.

The above proposition was accepted with the following proviso: That the weekly-pay law be complied with in averaging the premium coal, and that all men directly or indirectly in the strike be reinstated, and that the screens remain as they are, free from all impediments or devices.

The following analysis of the Santa Fé proposition, which has been so unanimously accepted by the miners, was prepared by one of the oldest mining experts in the district, and will be perused with interest. It is of value as being a statement of the conditions on which the greatest miners' strike known west of the Mississippi river was settled, to the satisfaction of the men and that great corporation.

It is proper to add that the proposition was submitted to the men by C. J. Devlin, general manager or the Santa Fé coal-mining business.

PERCENTAGE.	Part of ton, in pounds.	Amount of money paid for same quantity of coal under former prices.		Number of 85-pound bushels contained.	Amount of compensation under Devlin's proposition.	Increase in compensation to the miner over former prices.	
		Summer.	Winter.			Summer.	Winter.
50.....	1,000	\$0 41.174	\$0 47.056	11.764	\$0 50	\$0 08.83	\$0 02.95
60.....	1,200	49.409	56.468	14.117	60	10.60	03.54
70.....	1,400	57.652	65.888	16.472	70	12.35	04.12

These figures are all based on former lump-coal prices, at 3½ cents in summer and 4 cents in winter, for each 85 pounds.

Thus the termination of the strike, or suspension, of three months' duration seemed near at hand, as the "Santa Fé" miners were willing to resume work, but before doing so, a contract was presented for their approval, a copy of which reads as follows:

MINER'S ANNUAL CONTRACT.

THIS AGREEMENT, Made this — day of —, A. D. 189—, between —, of the first part, and — of the second part, witnesseth, the said party of the second part has agreed, and by these presents does agree, to enter into the employment of the said party of the first part as a miner of coal, to commence on the — day of —, A. D. 189—, and continue therein until the — day of —, A. D. 189—, and to abide by, adhere to and observe all rules and regulations hereto appended, which was made a part of this contract, and abide by and observe all rules and regulations promulgated from time to time by said coal company, with the consent of the party of the second part, for the purpose of regulating mining and other employment in and about the coal mines of the said coal company, and not to be absent without leave, except in case of sickness or other unavoidable contingency that would prevent him from work; also, to keep — room or entry in good working order.

The said party of the first part agrees to pay the party of the second part for each ton of coal mined by him and delivered on pit cars at the mouth of the room

where the same is mined, as follows, viz.: For mining, ——— per ton, from above date to ———; all coal to be loaded free of dirt, sulphur, and slate.

Said first party hereby reserves the privilege, however, of closing the mines at any time, or of reducing the number of miners by discharging them, or such of them as the superintendent or person having charge of the mines for the time being may think proper, including said second party; all payments to be made between the 10th and 20th of the month for all coal mined and labor performed during the preceding month, in accordance with the rules and regulations aforesaid.

And it is hereby expressly agreed to and understood by the party of the second part, that should he become a tenant of the party of the first part, during the term of his engagement, that in case of its termination, either by discharge from the company's employ or in any other way, he will vacate the premises so occupied by him as early as practicable thereafter, upon a verbal notice from the company's agent or superintendent; and that he will not be entitled to receive any part of the wages due him for labor performed, should the party of the first part so elect, until the premises are vacated, and the keys of the same delivered at the company's office. And the party of the second part further agrees, that he will not stop work, join any "strike" or combination for the purpose of obtaining or causing the company to pay their miners an advance of wages or pay beyond what is specified in this contract, nor will he in any way aid, abet or countenance any such "strike," combination, or scheme, for any purpose whatever, during the time specified in the first clause of said contract.

IN WITNESS WHEREOF, The said parties have hereunto set their hands and seals, the day and year first above written.

By ——— Agent and Superintendent.

Witness: ——— (Signed in duplicate.)

RULES AND REGULATIONS ADOPTED FOR THE PURPOSE OF REGULATING MINING AND OTHER EMPLOYMENT IN AND ABOUT THE COAL MINES.

I.—Every employé of the company will be required to be ready for duty when the whistle blows for work every morning, and will be expected to perform a full day's work of 10 hours in his respective line of employment, unless the foreman of his department orders less time to be worked. Engineers are strictly forbidden to lower any miner or underground laborer into any pit after 7 o'clock A. M., without orders from the pit boss or person in charge of the pit head.

II.—No suspension of work shall take place during working hours, except in case of actual necessity.

III.—Any employé feeling aggrieved in any respect must present his claim to the pit boss in person. If he fails to adjust the matter in a manner satisfactory to the employé, it may be referred to the superintendent (if either party desires), whose decision, upon hearing of both sides of the question, shall be final.

IV.—Any employé who may have been discharged by the company, or who, with the consent of the company, may have left its service, shall receive all arrearages of pay due him at once. The company will consent to their employés leaving their service without previous notice, except under circumstances that in their judgment would indicate bad faith.

V.—No person will be allowed to interfere in any manner with the employer's just right of employing, retaining or discharging from employment any person or persons whom the superintendent or pit boss having charge of the mines for the time being may consider proper; nor interfere in any way, by threats and menace, or otherwise, with the right of any employé to work, in any way, and upon any terms, and with whom he may think proper and best for his interest, or the benefit of his family.

VI.—No employé will be permitted to fill his place by another man without the consent of the superintendent.

VII.—Every employé will be paid once a month, at the regular pay day, all wages or money he may have earned during the last calendar month previous to such pay day, after deducting any indebtedness which such employé may owe to the company, or which the company, with the consent of such employé, may have assumed to pay to any other person.

VIII.—It shall be the duty of every miner working in the mines to keep his rooms in said mines in good order and repair, and any such miner who shall willfully, negligently or carelessly suffer his room to get out of order or repair, and who shall not, upon request, immediately put the same in re-

pair, the company may put such room in repair at the expense of the miner in default, and retain the amount of such expense from the next or any future payment to which said employé would be otherwise entitled, until fully reimbursed for such expense.

IX.—No miner who has left the employment of the company, whether voluntary or by discharge, will be entitled to receive any arrearages of pay due him for labor performed, whether on the regular pay day or during the interval preceding pay, until he shall have put his room and roadway in perfect working order, as required by his contract with the company. All miners leaving said employment will be required to procure the certificate of the pit boss that they have complied with the requirements of this rule, as aforesaid, before making application at the company's office for final payment.

X.—Any tenant of the company, upon leaving its service, whether voluntarily or by discharge, will not be entitled to receive any part of the wages due him for labor performed until he shall have vacated the premises occupied by him (should the superintendent or other person in charge of the mine for the time being so elect) and presents the keys of the same at the office. And if no wages are due him he shall also vacate the premises within five days without process of law.

The signing of this contract was seriously objected to by many of the miners, who claimed it was nothing short of an ironclad, the approval of which would disfranchise them of the rights and privileges granted by the constitution. A period of three days' unpleasantness elapsed, when C. J. Devlin offered the following substitute, as a modification of the former contract:

To the Miners assembled at Frontenac, Kas., August 22, 1893:

To promote a better understanding, we put in writing our agreement as we made it with you last week, and which we propose to put in the form of a contract, and to have each man who has already signed a contract to sign one similar to this, and to return his old contract to him.

CONDITIONS OF THE CONTRACT.

First. That the price of mining shall be 50 cents per ton, run of mine, and a premium of 5 cents for each 100 pounds for all coal averaging over 50 per cent. of lump in a ton of run of mine, said average to be arrived at weekly or monthly, and this price to continue until May 1, 1895; all coal to be loaded free from dirt, sulphur, and slate.

Second. That all entry work and underground labor, and all deficiencies and opening of rooms and such like, shall be paid during the period of this contract the same as has been paid during the last 12 months.

Third. That settlements will be made monthly, not later than the 15th of each month, and weekly advances made to the employés, when required by them, equal to 90 per cent. of their earnings.

Fourth. That the miners will be permitted to have a check weighman, and he will run a check of his own to collect enough money to pay his wages only; and that should he at any time become obnoxious to the company, the miners will be notified, and another check weighman will be required in his place.

Fifth. We will have no dealings with executive committee or district board, and we will permit no pit committees.

Sixth. We will reserve the right to hire and discharge who we please.

Seventh. All check weighmen will have to be employés in the mines where they are selected from.

VERBAL AGREEMENT.

All the dealings between the men and the company will be by the officers of the L. U., or L. A., at the company's works, and by the company's agents.

This last contract was unanimously accepted by the miners of the Pittsburg & Cherokee Coal and Mining Company. This being the first break

in the miners' ranks, the best concessions possible were made with other companies, who resumed operations a few days later.

THE WEAR COAL COMPANY'S CONTRACT.

First. The price of mining shall be 50 cents per ton of 2,000 pounds mine run coal from date to September 1, 1893; from September 1 to March 1, 1894, 56 cents per ton; from the 1st of March to the 1st of May, 1894, 50 cents per ton, at which time this contract expires. All coal to be loaded free from dirt, sulphur, and slate.

Second. That all entry work and underground labor, and all deficiencies and opening of rooms and such like, shall be paid during the period of this contract the same as has been paid during the last 12 months.

Third. That settlements will be made monthly upon the nearest Saturday to the 15th of each month for the previous month's work.

Fourth. That the miners will be permitted to have a check weighman, and he will run a check of his own, and to collect enough money to pay his wages only, and that should he at any time become obnoxious to the company the miners will be notified, and another check weighman will be required in his place.

Fifth. We will have no dealings with executive committee or district board, and we will permit no pit committees.

Sixth. We reserve the right to hire and discharge who we please.

Seventh. All check weighmen will have to be employés in the mines where they are selected from.

THE WEAR COAL COMPANY.

Witness: ———.

By ———, *Superintendent.*

Dated August 30, 1893.

—————.

CENTRAL COAL AND COKE COMPANY'S CONTRACT.

THIS AGREEMENT, Made this ——— day of ———, A. D. 189—, between CENTRAL COAL AND COKE COMPANY, of the first part, and ———, of the second part: Witnesseth, The said party of the second part has agreed and by these presents does agree to enter into the employment of the said party of the first part as a miner of coal, to commence on the ——— day of ———, A. D. 189—, and continue therein until the ——— day of ———, A. D. 189—, and to abide by, adhere to and observe the rules and regulations hereto appended, which are made a part of this contract, and abide by and observe all rules and regulations promulgated from time to time by said coal company, with the consent of the party of the second part, for the purpose of regulating mining and other employment in and about the coal mines of the said coal company, and not to be absent without leave, except in case of sickness or other unavoidable contingency that would prevent him from work. Also, to keep his or their room or entry in good working order.

The said party of the first part agrees to pay the party of the second part, for each ton of coal mined by him and delivered on pit cars at the mouth of the room where the same is mined, as follows, viz.: For mining, ——— per ton from date to ———.

All coal to be loaded free of dirt, sulphur, and slate. Said first party hereby reserves the privilege, however, of closing the mines at any time, or of reducing the number of miners by discharging them, or such of them as the superintendent or person having charge of the mines for the time being may think proper, including said second party. All payments to be made between the 10th and 20th of the month for all coal mined and labor performed during the preceding month, in accordance with the rules and regulations aforesaid.

And it is hereby expressly agreed to and understood by the party of the second part, that should he become a tenant of the party of the first part during the term of his engagement, that in case of its termination, either by discharge from the

company's employ or in any other way, he will vacate the premises so occupied by him as early as practicable thereafter, upon a verbal notice from the company's agent or superintendent, and that he will not be entitled to receive any part of the wages due him for labor performed, should the party of the first part so elect, until the premises are vacated and the keys of the same delivered at the company's office. And the party of the second part further agrees, that he will not stop work, join any "strike" or combination for the purpose of obtaining or causing the company to pay their miners an advance of wages or pay beyond what is specified in this contract, nor will he in any way aid, abet or countenance any such "strike," combination or scheme for any purpose whatever during the time specified in the first clause of said contract.

IN WITNESS WHEREOF, The said parties have hereunto set their hands and seals the day and year first above written.

CENTRAL COAL AND COKE COMPANY.

By _____, Agent and Supt.

(Witness) _____.

The signing of the contracts and the various prices established by the companies throughout the mining district were not approved, in general, by the miners. About the latter part of August, all the mines in Cherokee and Crawford counties were in operation, but a uniform price for mining was not established in the district. Some operators paid 50 cents and some paid 56 cents per ton for unscreened coal, while others paid 50 cents and 5 cents premium for every 100 pounds of screened coal in excess of 50 per cent.

The regulation of prices left the district in an unsettled condition. The same also, may be said of Leavenworth county, as the Kansas & Texas and Home mining companies paid 80 cents per ton for unscreened coal, while the Leavenworth Coal Company resumed operations about the last of August, under the following

AGREEMENT.

THIS AGREEMENT, Made and entered into by and between the Leavenworth Coal Company, a corporation created and existing under and by virtue of the laws of the state of Kansas, of the first part, and the undersigned as parties of the second part, witnesseth, that the said party of the first part, for and in consideration of the premises hereinafter stated, does hereby hire the undersigned individuals up to May 1, 1894, from the date of this contract, and no longer, to mine coal in the mine of said company, at Leavenworth, Kas.

The said individuals are to receive, for their services for the coal so mined by each of them, pay at the rate of 4 cents per bushel for screened coal during such time; the coal thus mined to be passed over a screen with 1 inch mesh, 6 feet wide and 12 feet long. And the said parties of the second part are to receive no pay for or because of the coal passing through such screen, and the said 4 cents per bushel for such coal so passing over said screen, as aforesaid, is to be their full pay and compensation. And said persons so mining coal, as aforesaid, shall be paid at such rate for their services every two weeks by the said company, at its office at said mine.

And the said parties of the second part hereby bind and obligate themselves to mine coal during said time from this date, and agree to conduct themselves, in all respects, in a proper and orderly manner, and to do no injury to the said mine or any of the property of the said party of the first part.

WITNESS our hands and seals, this — day of August, A. D. 1893.

THE LEAVENWORTH COAL COMPANY.

By _____, President.

By the 1st of September, all the miners of Cherokee, Crawford and Leavenworth counties had resumed work, except those who had taken a prominent part in the suspension. Those men were refused employment by the companies which formerly employed them. In applying for work at any of the principal mines in the district, a letter of recommendation from their last employer was necessary. Failing in this, they were refused, except at the Kansas & Texas mine No. 18, the lessee of which made no discrimination. The disagreeable experience and the vanishment of accumulated gains may prove in the future a valuable lesson to both operators and miners in Kansas.

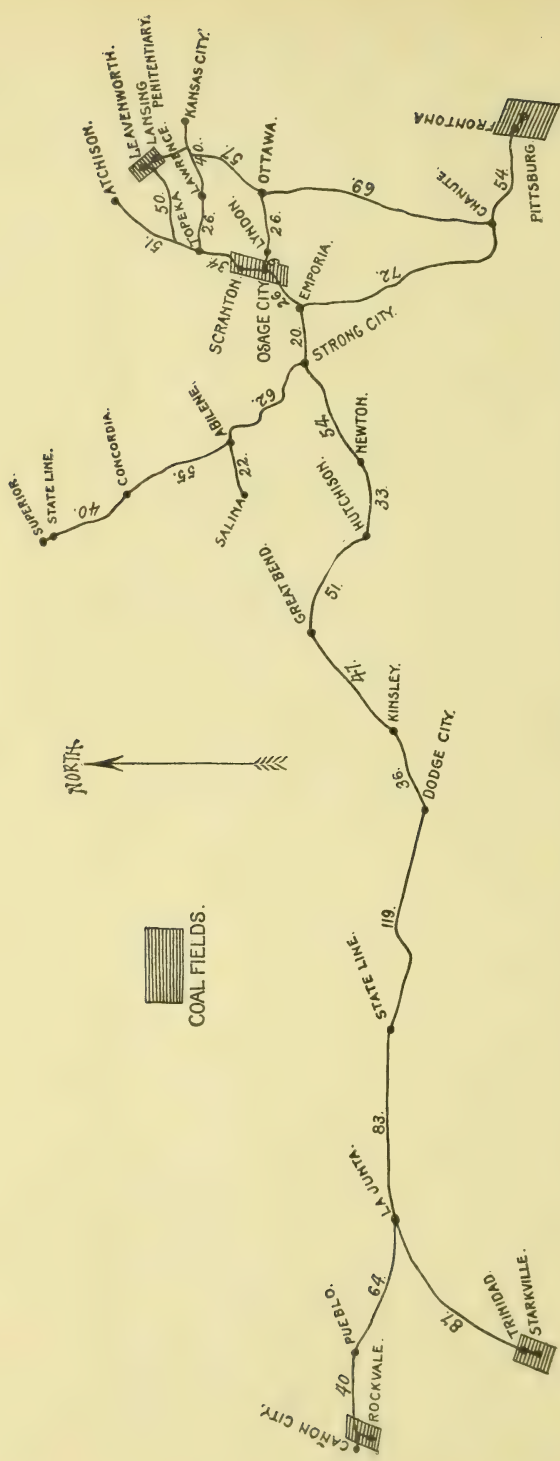
SUSPENSION IN OSAGE COUNTY COAL FIELDS.

As the principal reasons of the strike or suspension have been explained in the first part of this article, I would state that in Osage county there had not been and are not now any screens used, as the coal makes but very little slack or nut in mining. To better understand the interest taken in behalf of the miners of southern Kansas, it is necessary here to show the relations that exists between the conditions of the coal miners of southern Kansas and those of Osage county. The mines in both districts are situated along the main lines and branches of the Atchison, Topeka & Santa Fé railroad and the Missouri Pacific railway. Both roads own or are interested in mines in southern Kansas.

The Atchison, Topeka & Santa Fé railroad owns the largest amount of coal lands in Osage county, and turns out over half the amount of coal mined in the county. Nearly all the steam coal used by the Atchison, Topeka & Santa Fé railroad in the eastern part of Kansas, which contains two-thirds and more of its population, is taken from the mines in Cherokee, Crawford, and Osage counties. Some part of the supplies of the Missouri Pacific comes from the southern Kansas fields. The Santa Fé Railroad Company also owns the majority of the coal mines near Cañon City, Colo., and around Trinidad, Colo., and others in Missouri, New Mexico, and elsewhere. The Missouri Pacific Railway Company operates coal mines at Rich Hill, Minden, and other places in Missouri, also some in Arkansas and other states.

In the consumption of Osage county coal, in the past, nearly one-half has been used for railroad purposes. This portion is furnished by the coal companies organized as auxiliary to the railroad corporations only, the independent coal operators not being permitted any share of that trade, while the railroad coal companies do not confine themselves to mining coal for railroad use only, but enter largely into the competition for the commercial, manufacturing and smelting trade.

The railroad companies being thus in the position of both producer and consumer, their interests are different from those of the independent coal operator. A reduction of the price paid for mining is to them not only a



THE COAL FIELDS OF THE SANTA FE SYSTEM IN KANSAS AND EASTERN COLORADO.

means of meeting competition of coals of other coal fields in the commercial market at an unchanged operator's margin, but it means at once a great direct saving in the fuel bill of the road. This saving is, owing to the large amount of coal used by the railroads, a greater object, by far, than the mere gain from increased local sales. In fact, to accomplish any such saving, the railroads can afford to sell much commercial coal at a loss, and thus, by depressing prices in the commercial market, force a reduction in miner's wages to correspond thereto; as an example, take the fuel bill of the Atchison, Topeka & Santa Fé Railroad Company, in the year 1892, which amounted to \$1,645,097.01 for locomotive use alone; adding thereto the cost of coal used in cars, depots, offices, shops, pumping stations, etc., the total fuel bill of the road will exceed \$2,000,000. At \$2 per ton, which is probably above the cost of the coal at the mines, taken altogether, the road used 1,000,000 tons of coal. A reduction of the mining price of 10 cents per ton only means a saving of \$100,000 per year to the one railroad system—the Santa Fé alone. A reduction in the selling price of commercial coal to a point forcing the independent operator to work at a loss will, therefore, compel him to turn upon the only party left on which to recoup himself. He must bring his pressure to bear upon the weakest point. He must force the miner to accept smaller and smaller wages, and, doing this, still strengthen his real antagonist.

There is still another point to be considered, viz., that of transportation charges. The freight rate is, in the coal business, in most cases, the factor next in importance to cost of coal at mines. In some cases, where the point of consumption is remote from the mines, it even becomes the most important factor. The power of naming the rate for transportation of coal is, under our present laws, lodged in the railroad companies. The railroads make such rates as will be of most advantage to their auxiliaries, the railroad coal companies. They have adjusted transportation charges so as to bring coal fields into close and unnecessary competition in many markets. Their own companies are practically unaffected by the loss to any particular coal field of any especial market. Their loss in one locality is balanced by a corresponding gain in the other, while the independent operator, losing for the time being his entire market by a small change in the rates, or prices, is driven to the wall.

The diagram on page 130 presents a view of the location of the four principal coal fields on the Atchison, Topeka & Santa Fé system, together with the distance to the principal towns where these coals compete, the Santa Fé system being taken as an illustration, since it carries to market about 90 per cent. of all the coal mined in Osage county. The following schedule of actual coal freight rates and distances will illustrate this point.

To 	LYNDON.			TOPEKA.			ATCHISON.		
FROM 	Miles.....	Rate per ton...	Rate per ton per mile, in cents.....	Miles.....	Rate per ton...	Rate per ton per mile, in cents.....	Miles.....	Rate per ton...	Rate per ton per mile, in cents.....
Osage City	9	\$0 50	5.55	34	\$0 60	1.76	85	\$0 65	.76
Scranton	22	50	2.27	21	60	2.86	72	65	.90
Frontenac.....	145	1 30	.90	177	1 40	.79	234	1 00	.45
Trinidad and Starkville, Colo...	559	3 90	.70	584	3 90	.67	634	4 40	.69
Cañon City, Colo.....	583	4 00	.69	608	4 00	.66	659	4 50	.68

To 	KANSAS CITY.			OTTAWA.			EMPORIA.		
FROM 	Miles.....	Rate per ton...	Rate per ton per mile, in cents.....	Miles.....	Rate per ton...	Rate per ton per mile, in cents.....	Miles.....	Rate per ton...	Rate per ton per mile, in cents.....
Osage City	92	\$0 65	.71	35	\$0 65	1.86	26	\$0 60	2.31
Scranton	88	65	.74	43	65	1.35	39	60	1.54
Frontenac.....	181	80	.44	119	80	.67	126	1 50	1.19
Trinidad and Starkville, Colo...	650	4 40	.68	585	3 90	.67	524	3 90	.74
Cañon City, Colo.....	675	4 50	.67	615	4 00	.65	549	4 00	.73

To 	NEWTON.			HUTCHINSON.			ABILENE.		
FROM 	Miles.....	Rate per ton...	Rate per ton per mile, in cents.....	Miles.....	Rate per ton...	Rate per ton per mile, in cents.....	Miles.....	Rate per ton...	Rate per ton per mile, in cents.....
Osage City	100	\$1 20	1.20	133	\$1 40	1.05	109	\$1 30	1.19
Scranton	113	1 20	1.06	146	1 40	.96	122	1 30	1.07
Frontenac.....	200	1 90	.95	233	2 00	.86	208	2 00	.96
Trinidad and Starkville, Colo...	450	3 90	.87	417	3 80	.92	566	3 90	.69
Cañon City, Colo.....	475	3 60	.76	442	3 60	.82	591	3 60	.61

To 	SALINA.			CONCORDIA.			SUPERIOR, NEB.		
FROM 	Miles.....	Rate per ton...	Rate per ton per mile, in cents.....	Miles.....	Rate per ton...	Rate per ton per mile, in cents.....	Miles.....	Rate per ton...	Rate per ton per mile, in cents.....
Osage City	131	\$1 30	1.00	164	\$1 60	.98	204	\$2 00	.98
Scranton	144	1 30	.90	177	1 60	.90	217	2 00	.92
Frontenac.....	230	2 00	.87	263	2 20	.84	303	2 40	.79
Trinidad and Starkville, Colo...	588	3 90	.66	621	3 90	.63	661	4 00	.61
Cañon City, Colo.....	613	3 60	.59	646	4 00	.62	686	4 00	.58

As will be seen, the coal freight rate per ton per mile from Osage county points to all the principal markets of Kansas is far in excess of the coal freight rate from southern Kansas or Colorado. This goes to such an extent that southern Kansas coal is shipped in actual competition with Osage county coal into Lyndon, the county seat of Osage county, situated but nine

miles east of Osage City, just outside of the limits of the Osage county coal fields. Nature has granted an advantage to the southern Kansas coal field, which should make it the paramount and controlling influence in its proper market; but the power which makes freight rates establishes them in such manner that its coal encroaches upon the natural market of other fields.

The system of decreasing rapidly the rate per ton per mile charged in transportation is largely responsible for this condition of affairs. The rate to Lyndon, in Osage county, is one of the clearest points in view. It is, from Osage City, 5.55 cents per ton per mile; from Scranton, 2.27 cents; from Frontenac, .90 cent; from Trinidad, Colo., .71 cent; from Cañon City, Colo., .69 cent. Scranton, located within only 21 miles of Topeka, pays 2.86 cents per ton per mile, while the rate to that point from Frontenac is but .79 cent, and from Colorado points, .67 cent and .66 cent; and so in central Kansas.

Kansas coal fields, which ought to, from their nearness, supply the market of that territory, are charged a rate of freight that does not correspond with those charged Colorado coals. As an instance, Cañon City coal is hauled for \$3.60 a ton to Raymond, on the main line of the Santa Fé, then east to Strong City, 117 miles, and then north to Salina, 84 miles, being a total haul of 201 miles, without any charge whatever. The total raise of freight rate for hauling one ton of Cañon City coal from Dodge City across two-thirds of the state to Topeka, 302 miles in distance, is but 50 cents per ton, while Osage City is charged that exact sum—50 cents—to get a ton of it hauled to Lyndon, nine miles distant. Trinidad, Colo., coal is hauled to Burrton, on the main line of the Santa Fé, for \$3.20 per ton, thence east to Strong City, thence north across the state to Superior, Neb., a distance of 219 miles, without any additional charge whatever, while Osage City to Superior, only 204 miles, is charged \$2 per ton, and Frontenac, 303 miles distant, pays \$2.40 per ton. This haul from Frontenac to Superior, Neb., at \$2.40 per ton, is exactly like in distance to the haul of Cañon City coal from Dodge City to Topeka, quoted above, at a charge of only 50 cents per ton. Like comparisons might also be easily made with rates charged on coal from Wyoming, Iowa, Illinois, Missouri, Arkansas and Indian Territory coal points. It can be easily seen by these comparisons that the system of permitting corporations to make coal rates not based upon distance is the cause of much discrimination and its attendant evils.

Our railroads can raise or lower the price of coal in any given town. This often does give one mining point an improper encouragement to go out of its legitimate market and compete for the trade of points really within the natural reach of some other mining points, which latter, not having the benefit of such rebate, are often shut out of their proper markets. As a remedy, I would suggest a law making a specific rate per ton per mile on coal, regardless of distance hauled, just as our passenger-rate law makes no difference whether a passenger travels 5 or 500 miles. This rate, under the

law, should be inflexible, allowing no deviations either above or below the lawful standard. This, then, was the condition of the coal market in the spring of 1893. A reduction in the mining price in southern Kansas clearly threatened not only a corresponding reduction of the mining price in Osage county, but, till the inevitable adjustment, it threatened also the loss of a large part of the legitimate trade of Osage county, and a corresponding period of slack work and small pay; and the very threat of the impending reduction in the mining price wore a dark and dismal aspect to the miners of Osage county. Were these reductions never to end? From the opening of the mines, these reductions had come periodically. The scale of prices, with but one, and that but temporary, exception, showed lower and lower range. The mining price early in 1873 was 11 cents per bushel, equaling a rate of \$2.75 per ton, which gradually sank to the present average, \$1.35 per ton—a reduction of \$1.40 per ton in 20 years. When and where were these reductions to stop? It was in this strain that the miners discussed the situation and the news and reports from southern Kansas.

The coal miners of Osage county heretofore have conducted their common business in the following way: Each shaft or mine selects one delegate. Whenever any question of common concern comes up for consideration, the mine delegates are instructed by the mine meeting as to the action required. The delegates agree upon a course to be pursued. This course is then referred back to the mine meeting, and, if then approved, will be carried into execution by an executive board of three, selected by the delegates.

It was in this manner that the proposition to aid the miners of Crawford and Cherokee counties by a suspension of work was formally discussed, and the formal decision finally rendered upon the result of a vote. In this vote each miner was given a slip of paper whereon the words "For a suspension" and "Against a suspension" were printed, on separate halves, the miner tearing off one-half, and voting according to his view. The vote showed an overwhelming sentiment in favor of a suspension.

The general feeling was so strong that, in Osage City, out of some 600 miners, only 22 ballots were cast opposing a suspension of work. One of the remarkable features of this strike was that the sentiment of the merchants and business men of the community was with the miners. Never before in the history of Osage City had a strike or suspension been popular.

Many expressed their sympathy by large donations to tide through some of the poorest of the men.

On June 7, the men cleaned up their places, and after that day all work ceased in all the mines of Osage county. There were no disturbances whatever in Osage county at any time during the continuance of the strike or suspension.

The coal is but 12 to 20 inches thick, and barely anything but coal is taken from the rooms; so that new men, owing to the very limited space in which the Osage county miners work, even if experienced coal miners, can-

not make much progress for a considerable length of time. That is probably the reason why no effort was made by any of the companies to replace the men with men from elsewhere. The strikers spent their time working their gardens, discussing the situation, and watching the train loads of coal coming from Missouri and Illinois and from the Kansas Penitentiary, passing through to supply the railroads and other consumers. The fact that the Penitentiary shaft, owned by the people of the state, of whom the miners are a part, assisted materially in supplying the market and neutralizing the efforts of the striking, free miners, seemed to excite a great deal of comment.

The subject of the contracts under which the Penitentiary coal is sold was largely discussed in the meetings of the miners' organizations. This subject had been a great source of grievance to the miner in the past. He does not object that the convicts should work; he does not even particularly object that the convict should dig coal; nor does he object to the convict-mined coal being supplied to the state institutions; but he does object to the system of selling the product under contract, or otherwise, without the quantity being based on legitimate needs and the price based upon the cost and selling price of like coal produced by free miners. He objects to coal being produced by convicts, who do not provide for wife and family, do not educate their children, nor pay any tax, being sold in disregard of the cost and selling price of other coal, because competition of that kind must reduce his wages to the standard of the convict, eventually making a convict of himself. It is impossible for miners, or any other craft, to receive a just remuneration for their labor when forced to compete with convict labor in the market.

In my opinion, the convict should receive pay for every bushel mined at the same rate as that paid the free miner of Leavenworth, charging him for board and clothing; and the necessary cost of operating the mine be charged to the management. If other coal companies can operate their mines profitably, why not the great state of Kansas? If the convicts were paid as the free miners are, they could contribute to the support of their fathers, mothers, wives, or families, who may have been left destitute in some other part of the country, where, in many cases, the district or county has to levy an additional tax for their support. If the convict had no one depending upon his support, at the expiration of his term he could engage in some legitimate business, probably, with his little savings. Instead, he is turned loose, with no visible means of support, and branded as a convict, whose reputation and character are scarcely worth considering; and, thus disheartened, he becomes reckless, and soon finds himself on the way to some other institution or place of punishment similar to the one from which he had been dismissed.

The Penitentiary or state mine should be governed by some similar plans to those laid before the mining committee of the Kansas house of represent-

atives of 1891 by four mine experts, viz.: Messrs. John Gray, of Osage City; Hugh Bone, of Chicopee; Robert Gilmore, of Scammon; and A. S. Glasgow, of Leavenworth, appointed by that body in response to the following memorial:

The Osage City Citizens' Alliance to the Kansas Legislature, regarding the Leavenworth Convict Coal Shaft.

The Citizens' Alliance of Osage City, composed largely of miners and persons connected with coal mines, respectfully directs the attention of your honorable body to the statement of the workings of the State Penitentiary, as shown in the governor's message, and to the effect the present system of working the convict coal shaft has upon the mining industry and upon the welfare of the miners of the state.

There were in the two years reported upon, on an average, 876 convicts worked in the Penitentiary. During that period there was received in cash \$209,125.59. Besides this, there were made certain improvements within the Penitentiary, and coal furnished to state institutions, amounting to (all told) \$95,966.16. Total earnings of 876 prisoners in two years, \$305,092.75; or an average of \$348.28 per prisoner for two years' work; or \$174.14 per year; or \$14.51 per month. The message shows also that during that period there was an output of 3,405,231 bushels of coal, and sales of same to the amount of \$134,598.43.

From the facts so stated in the governor's message, we deduct the following: The state receives from the work done by the convicts only \$14.51 per month, or less than one-half what the work of ordinary free laborers—mechanics, clerks, or coal miners—is worth. The plant of the Penitentiary has been furnished by taxes raised from the citizens of the state. There is no interest account accruing to take away part of the revenue of the business done. The supplies furnished for the maintenance of the prisoners are bought at wholesale, and should be therefore gotten at a less rate than those used by private people. Any private business man operating a business of a magnitude equal to the Penitentiary, should it be in like circumstances—that is, free from taxes and interest—be enabled to make large profits, while the business done by the present management shows a loss, that has to be made up by taxation. Anyone acquainted with the management of mines must be convinced that there must be gross extravagance, mismanagement, incompetency, or worse, in the operation of that concern; and those can be found who would operate 800 men (in no position to strike, or refuse to work in unpleasant places) and realize out of the product sufficient to turn over \$100,000 annually to the state, after paying all expense and keeping up necessary improvements. There is a worse feature attached to the operation of the convict coal shaft: the coal produced by men for whose work the state, under the present system, receives only \$14.51 per month, is sold to contractors at a price away below its actual value, and is sold in competition with coal mined by free, honest labor of men who are compelled out of the proceeds of their labor to provide for their families, educate their children, and pay taxes to the state. Especially is this competition felt in the summer, or when, as in the three years past, there is a mild winter. During these times the ordinary consumption of coal is small, and the earnings of the miners are then very light. The free miners eke out their scant earnings resulting from two or three days' of mine work a week by gardening, or doing odd work around the mining community; but the work of the convict miner, done under compulsion, goes on every day, until the coal forced on an unwilling market demoralizes and breaks down the market and mining price even of such scant demand as may remain. A plain illustration of these facts is now to be seen in the strike of the free miners of one of the coal companies

of Leavenworth. These miners are now, in midwinter, on a strike against a reduction of the mining price, and it is alleged that the company these men are working for is, if not composed of the same men who hold the contract for the Penitentiary coal, at least so intimately connected with them that they can use the Penitentiary coal to supply their trade. This of course means that so many free coal miners shall be gradually, or at once, brought down in earnings to the level of the convicts, *i. e.*, \$14.51 per month; or, in other words, to be brought into a condition where it would be far better for them to become thieves and convicts, rather than be free, honest, self-sustaining workmen.

In view of these facts, we think it little short of criminal to ask to put the convict shaft into a still better position to produce yet more coal; to call for an appropriation for better underground haulage, electric lights, etc. If it be the object of the state to use the work of the convicts for the purpose of getting revenue only, then its present management has made a woeful failure of it; if it be the object of the plant to provide work for the convicts, and prevent them from spending their days in idleness, then there is a plain inconsistency in the demand for more and better labor-saving machinery. It looks like an attempt to ease the toil of the convict and at the same time place an additional burden upon the free miner. Even now, where the free miner has to do from \$30 to \$40 worth of work per month to maintain his family, the convict is allowed to get off with \$14.51 worth. Upon these reasons we base the following request:

First. That the legislature appoint a committee of four experienced and practical miners, one each from Osage, Leavenworth, Cherokee and Crawford counties, to investigate the workings of the Leavenworth convict shaft, and report their findings to the legislature.

Second. That the legislature withhold from said convict shaft its appropriation until after a consideration of the report of said committee.

The following is the report of the committee appointed to investigate the Penitentiary coal shaft:

To P. H. Dolan, Chairman of House Committee on Mines and Mining of the Legislature of the State of Kansas, year 1891:

Your subcommittee of experts appointed to accompany your honorable committee to Leavenworth, to make certain investigations concerning the workings, management and condition of the state mines at that place, beg leave to make the following report and recommendations:

As to the mechanical arrangement of the shaft, we have been able, in the short time permitted, to visit and inspect only a portion of the Penitentiary mines. That portion we find in a first-class condition. We find ample opening in the coal now owned and leased by the state to employ from 250 to 500 men for years to come. We find that there are three veins of coal beneath the one now in operation, of greater thickness, which would give over 100 years' work at the present output of the mine.

We therefore recommend that no appropriation be granted; neither for the purchase of more coal territory, nor for the purchase of cables or electric motors, or any improved system of machinery of underground haulings, or light, to assist in the increase of the production of coal. There is ample surplus of labor employed to do all the necessary work of hauling, and labor at 53 cents per day is cheaper than the wear and interest upon the cost of additional machinery. We find the machinery for screening and cleaning of coal in excess of anything we know in that district. The coal is prepared with so much more expenditure of machinery and

labor that it becomes superior, and more valuable in the markets—fully 25 cents per ton.

There is at present practically no system of accounting for all the coal mined. We recommend that a scale be put on the mine. Every box of coal hoisted should be weighed according to such scale, and what is called the weigh sheet should be kept, giving each convict miner a number, and showing the accurate amount of coal mined by him. This quantity should tally daily, weekly, monthly and yearly with the amount of coal sold and used in the Penitentiary. These weigh sheets should be in the possession of the superintendent, to form a check against any waste or loss of coal.

As to the cost and distribution of the coal, we find, from the evidence of practical men adduced at the investigation, that the product of the convict laborer, under the present contract system, is forced upon the market in disastrous competition to free labor and free business, and should be abolished. We are satisfied that the mine owners in Leavenworth are damaged, and also the coal miners, on account of the coal being sold, by contract, at a less price than at which it can be produced by free labor, and that the state is losing money by the transaction. If a check weighman was appointed at each coal shaft, and the coal miners were paid for all the coal they mine, and the present mine owners had to compete with the Penitentiary mine at the present price, it would close every mine in the city of Leavenworth.

The parties who suffer most by the present manner in which the state coal is sold are the coal miners. They are paid 4 cents per bushel for mining, but they only receive this amount for what passes over the screens, and as 25 per cent. passes through the screens, their price is reduced to 3 cents per bushel, so that a coal miner has to dig 50 bushels of coal in a day to make \$1.50. Seeing that they have only three days a week, according to present arrangement, if a coal miner wants to be well cared for, and have a comfortable home, he must commit some act against the law, for which he will be sent to the Penitentiary.

It is true that the state of Kansas has a very good property in the state coal mine—too valuable, in fact, to be set aside—and we believe men who commit crime and are sent to the Penitentiary ought to be compelled to work. We make the following suggestions, which would provide the convicts with work, keep them from competing with the coal miners of the state, and would distribute the benefits of the state mines throughout the state: Let all the institutions be supplied with coal; let every courthouse in the state be supplied, and also every country schoolhouse; then let the balance be divided in equal proportions by taxation or population in every county in the state, and supplied at cost price by the county commissioners to the poor people in such county.

If the above, in your judgment, is not advisable, we recommend that at the expiration of the present contract the state by law empower and authorize the superintendent to sell the surplus coal, after supplying the state institutions, at not less than the cost of same, computed on the following basis:

First. The management shall be charged for each and every bushel of coal mined by each convict at the same price as is paid per bushel to the free miner in the Leavenworth district.

Second. The management shall be charged with all the dead work, yardage, and day work, to be estimated by the superintendent, at prices to equal prices paid free miners for like work in that district.

Third. To the above shall be added the cost of all material used in the operation of the shaft, interest on the investment, cost on the shaft, and 6 per cent. on \$1,500; 2 per cent. of the cost of the shaft as a sinking fund to replace the same; a royalty of not less than 2 mills per bushel for all coal mined, computing the cost of the coal

as above recommended; the superintendent shall sell the coal at not less than cost. We think that with the superior equipments of the convict shaft, and the further advantages of being at all times able to command the services of a large number of men, it will be no difficult matter for the superintendent to dispose of the coal without loss, and even to an advantage to the state. Respectfully submitted.

JOHN GRAY, Osage City.

HUGH BONE, Chicopee.

ROBERT GILMORE, Scammon.

A. S. GLASGOW, Leavenworth.

The total number of men idle, because of the strike, was something near 1,300. They were idle from June 7 to August 21—about ten weeks. This may seem a heavy loss to the men, and to the community of Osage county; but that loss was more apparent than real, as the average work during these (the summer) months for years past, I am informed, had rarely exceeded \$2 per week to the average miner. In fact, some of Osage City's merchants claim, that at the expiration of the strike the men, as a rule, were no worse off—rather better, if anything—than usually, at that period of the year. They claim that the miners, not being able to foresee the duration of the strike, and being determined to carry it through, as long as southern Kansas stood, used extraordinary economy in their domestic arrangements. They say that families who usually buy from \$12 to \$15 worth of groceries per month got along with from \$3 to \$4 worth, and so made up for the loss of work.

That the strike was not a success is well known. Various causes have been assigned therefor. But it must be said, that under the conditions which developed during the summer, and principally after its inauguration, a successful issue seems to have been impossible. It was during the early part of the strike that the English government, in demonetizing silver in India, brought about the rapid fall in the price of silver, which closed hundreds of mines in Colorado, and throwing thousands of silver miners out of employment.

The general commercial panic and depression immediately following added thousands of idle men, to fill, from other mines, the demands of the legitimate market of the Kansas mines; and at the same time, by closing numberless factories and ore mines, East and West, largely curtailed the consumptive needs for coal. When it became known that the miners of southern Kansas had made arrangements to go back to work, the executive board of the Osage county miners called meetings over the county, and, upon a favorable ballot, the men agreed to resume work. All the companies who are independent of the Atchison, Topeka & Santa Fé Railroad Company opened their mines at once, and set as many of the men at work as they could conveniently find room for. The Osage Carbon Company did not open its mines at Osage City until October 25; at Scranton, the same company resumed operation January 1, 1894, enforcing a reduction of the mining price paid of 25 cents per ton at the same time, which the Scranton men were forced to accept. This reduction, being a direct effect of the

reductions offered in southern Kansas, and of the conditions cited before, has since become general in Osage county, as the miners of the other companies in Scranton and Burlingame had to follow; and the miners of Osage City and Peterton have since been forced to accept a reduction of about 25 cents per ton.

DUST EXPLOSIONS.

Numerous dust explosions have been reported recently from Colorado, Missouri, and the Indian Territory, and the same may be said of Kansas. Almost universally they have been caused by "windy shots"—that is, shots which have failed to break coal, because the charge was too light, or the direction was badly chosen, expending their energies on the atmosphere. Great skill in boring and loading will prevent such accidents.

Occasionally explosions have been traced to the second shot, which dislodged the coal, and which was claimed to have been the instigation of such explosions. This is accounted for by the fact that the windy shot had agitated the air and dust, and heated the surroundings. These conditions render the ensuing explosions possible.

The removal of the dust from the entire mine is evidently impossible. Sprinkling settles the dust and reduces the danger of explosion. But it must be remembered that it is not the dust of the traveling ways which is dangerous, but the dust produced at the working faces. The sprinkling should, therefore, be practiced at the face and not in the roadways. Discussions on this subject will be found in the *Journal of the Illinois Institute*, vol. II, and in the *Colliery Manager*, vol. IX.

In addition to a clearly written article by Wm. Giles, the above-mentioned journal contains a particularly instructive one, by George S. Rice, upon the Pekay mine explosion, which evidently is believed to have been caused by the dust and merely incidentally by powder. The following will explain the danger of coal dust in mines:

COAL DUST IN MINES.—IMPORTANT EXPERIMENTS ON ITS EXPLOSIVE PROPERTIES.—AN ABSTRACT OF THE METHOD ADOPTED TO CARRY OUT THE WORK, AND THE RESULTS OF THE EXPERIMENTS.

[From the *Colliery Guardian*.]

Mr. Henry Hall, inspector of mines for the west Lancashire district, England, at the suggestion of the royal commission on explosions from coal dust in mines, undertook a series of experiments on dusts collected from the principal seams in the respective mining districts. Each separate dust was to be tested as to its liability to explosion in the same way as had already been done with certain Lancashire dusts.

In order to keep the experiments within practicable bounds, and, at the same time, to insure their being sufficiently extensive and inclusive to be decisive of the characteristics of the dusts which accumulate in and about the roadways of mines in the various coal fields of Great Britain, it was necessary to fix a limit to the number of samples to be tested, and with that object, the following code of instructions was drawn up for the guidance of those who were kind enough, at the request of the respective inspectors, to undertake the collection of the samples:

(1) "The dust selected should be that found lodged on the timbering, or on ledges underground, or on ledges above the screens on the surface. The dust should

be gathered by the hands, and not by the shovel, and should be put in bags holding each about an hundred weight. Each separate bag should be placed in a deal box, tongued and grooved, and placed in a dry place, at least as warm as the spot whence the dust was taken.

(2) "There must be at least 5 cwt. of any particular variety of dust collected and forwarded, to insure a fair test of its liability to explosion.

(3) "It is impracticable to test more than four samples from any inspection district, consisting of about 5 cwt. of each variety.

(4) It is imperative that the dust be fine and dry, and it is suggested that one of the samples should be from the seam of the district bearing the character of being most liable to colliery explosions, and one should be from the seam considered most safe. Each box should bear a small label, in addition to the address label, giving the following particulars: Weight of dust in hundred weights and pounds, name of coal seam, name of colliery, quality of coal, where and by what means collected, whether from underground or from screens.

(5) "The boxes containing the bags of dust should be forwarded by rail or a covered wagon, and each box should be labeled on the outside as follows: 'Experimental coal dust; to be kept dry, and immediate delivery,' etc."

The samples of dust were all received in excellent order, some having been gathered from the ledges and timbers underground, others from the underground roads, and others again from the timbers over the screens on the surface. In a few cases the dust had been passed through a fine riddle, but there were enough samples in what may be called the raw state, from underground roads, to insure that the results of the experiments did not depend on any unusual or artificial conditions. Whatever care and labor may be bestowed on the collection of samples underground, it is, Mr. Hall thinks, impossible that the sample should be as fine and dry as that floated in the ventilation of a mine and lodged on the timbers about the roof, and on all uneven or projecting surfaces underground, from which dust is always ready to be lifted and thrown into the air current by any violent rush of air, such as might occur through a blasting shot blowing out, or in consequence of the ignition of a small body of fire damp.

The samples received for experimental purposes numbered in all 52, coming from 45 different collieries and from 36 separate seams; and, with the exception of four or five samples, all were tested. Mr. Hall details in tabular form the results of all the experiments. It is impossible to reproduce the whole of them, but we give the particulars relating to the fine experimental dusts, of which analyses are given at the end of this report.

The mine shaft placed at Mr. Hall's disposal by the proprietors of White Mass Colliery, Skelmersdale, is the same shaft in which he has made many similar experiments. It is 50 yards deep, 7 feet diameter; struts of timber 6 feet long and 7 inches broad are fixed from top to bottom of the shaft at intervals of 6 feet, to represent the timbering of an underground roadway. The ventilation of the shaft is secured by means of a small fan on the surface, driven by hand, and forcing fresh air to the bottom through 10-inch iron tubes. The tubes reach to within 5 feet of the bottom, and the quantity of air passed is about 750 cubic feet per minute. A wrought-iron cannon was used for the gunpowder shots. It measures 2 feet 11 inches in length, with a bore hole 2 inches in diameter and 2 feet deep, and it was charged in every case with $1\frac{1}{2}$ pounds of ordinary blasting powder, tamped lightly with coal dust. The tamping occupied a space of about 12 inches. The cannon was always charged on the surface, and lowered by means of a rope to the bottom, and fired in an upright position near the center of the shaft by means of a detonator in connection with an electrical machine.

<i>Colliery from which dust was collected.</i>	<i>Name of seam.</i>	<i>Condition of dust.</i>	<i>How collected, and whether from underground or screens.</i>	<i>Weight of dust used in experiment.</i>	<i>Weight of explosive used.</i>	<i>Dust in suspension, or at rest.</i>	<i>Interval between putting in dust and firing shot. Min. Sec.</i>	<i>Result.</i>
Lightmoor (Gloucestershire).	Rocky.	Fine, but brown.	Collected from main haulage roads underground.	2 cwt.	1½ lb. G. P.	In suspension.	2 0	No explosion, charring 11 yards.
	"	"	"	1½ cwt.	1½ lb. G. P.	"	3 0	No explosion, charring 11 yards.
	"	"	"	None added.	1½ lb. G. P.	At rest.	30 0	No explosion or charring.
	"	"	"	1½ cwt.	1½ lb. G. P.	In suspension.	1 30	No explosion, charring 6 yards.
	"	"	"	2 cwt.	1½ lb. G. P.	"	3 0	No explosion, charring 20 yards.
Clifton Hall (Lancashire).	"	"	"	2 cwt.	1½ lb. G. P.	"	3 0	No explosion, charring 25 yards.
	Trencherbone.	Fine and black.	Collected from screens.	1½ cwt.	8 oz. Roburite.	In suspension.	2 0	No explosion or charring. NOTE.—Roburite.
	"	"	"	1½ cwt.	1½ lb. G. P.	"	2 0	Most violent explosion, and flame 50 or 60 ft. above pit top.
	"	Very gray and heavy, mostly metal dust.	Collected a mile underground.	1½ cwt.	1½ lb. G. P.	"	1 30	No explosion, slight charring.
	"	Fine and black.	Collected from screens.	1½ cwt.	1½ lb. G. P.	"	3 0	Very violent explosion, and flame 50 feet above pit top. Shot fired from iron tube.
Albion (Gloucestershire).	Merthyr or Aberdare 4 ft.	Fine and black.	Collected by hand underground.	2 cwt.	1½ lb. G. P.	In suspension.	1 30	Most violent explosion, and flame 50 ft. above pit top.
	"	"	"	1½ cwt.	8 oz. Roburite.	"	1 30	No explosion or charring. NOTE.—Roburite.
	"	"	"	None added.	1½ lb. G. P.	At rest.	15 0	Most violent explosion, and flame 50 ft. above pit top.
	"	"	"	1½ cwt.	1½ lb. G. P.	"	18 0	Most violent explosion yet recorded, and flame 50 ft. above pit top.

<i>Colliery from which dust was collected.</i>	<i>Name of seam.</i>	<i>Condition of dust.</i>	<i>How collected, and whether from underground or screens.</i>	<i>Weight of dust used in experiment.</i>	<i>Weight of explosive used.</i>	<i>Dust in suspension, or at rest.</i>	<i>Interval between putting in dust and firing shot. Min. Sec.</i>	<i>Result.</i>
Albion (Glammorganshire).	Merthyr or Aberdare 4 ft.	Fine and black.	Collected from screens.	2 cwt.	1½ lb. G. P.	In suspension.	3 0	Very violent explosion, and flame 60 ft. above pit top (<i>tamped with clay</i>).
"	"	"	Collected underground.	2 cwt.	1½ lb. G. P.	At rest.	30 0	Very violent explosion, and flame 60 ft. above pit top.
"	"	"	"	None added.	1½ lb. G. P.	"	45 0	Explosion, and flame 15 ft. above pit top. NOTE.—No dust put in after last explosion.
Barrwood & Hough (West Scotland).	Kilsyth.	Fine, but brown.	Collected from ledges in return air roads underground.	2 cwt.	1½ lb. G. P.	At rest.	15 0	Most violent explosion, and flame 60 ft. above pit top.
"	"	Fine and black.	Collected at a coal crusher on surface.	1½ cwt.	1½ lb. G. P.	"	16 1	Most violent explosion, and flame 60 ft. above pit top.
"	"	"	"	1½ cwt.	2 lb. G. P.	In suspension.	3 0	Most violent explosion, and flame 50 ft. above pit top.
Beamish (Durham).	Busty.	Fine and black.	From screens.	2 cwt.	1½ lb. G. P.	In suspension.	3 0	Very violent explosion, and flame 60 ft. above pit top; also spreading horizontally about 12 yards.
"	"	"	"	2 cwt.	1½ lb. G. P.	"	3 0	Very violent explosion, and flame 60 ft. above pit top; also spreading about 10 yards horizontally. NOTE.—Gannon tamped with clay instead of coal dust.
"	"	"	"	None added.	1½ lb. G. P.	At rest.	20 0	Violent explosion, and flame 30 ft. above pit top NOTE.—No dust put in after last explosion.

The amount of charge of gunpowder used in the experiment ($1\frac{1}{2}$ pounds) was fixed upon as being likely to develop a similar flame to that produced by the accidental ignition of a small quantity of fire damp in a mine. The charge is somewhat heavier than an average mine shot, but in consequence of the tamping being placed loosely upon the explosive and not being rammed home, the shock and violence of the explosion is very inconsiderable, as compared with an average mine shot, where the tamping is always rammed home and beaten solid.

Mine shots in the West Lancashire inspection district, and used in strong coal, amount to as much as 20 ounces, or even more, and by reference to the earliest series of these experiments it will be seen that coal-dust explosions resulted from the firing of charges of one pound of gunpowder.

The experiments were commenced on each day by firing two-pound charges of gunpowder without dust, so that the onlookers might be better able to judge of the part played by dust in the subsequent tests.

When a high explosive was used, it was fired from an iron tube tamped with coal dust, as it was feared the cannon would not bear the shock. In a few cases, in order to make the tests of gunpowder and the high explosives precisely the same, the gunpowder charge was fired from an iron tube exactly similar to that used for the high explosives, and in two or three cases it will be noticed the charge was tamped with clay in place of coal dust.

The conditions under which each sample was tested were kept as nearly as possible the same in every case. Usually the sample was first tested in suspension—that is, the shot was fired with some of the dust floating in the air in the shaft. This state of things was considered most favorable to an explosion of the dust. If this experiment resulted in an explosion, then the same sample was again tested at rest—that is, an interval of 15 or 20 minutes was allowed to elapse after putting the dust down, and before firing shot; the dust having by that time settled, part on the timbers and the remainder at the bottom of the shaft, and if an explosion resulted under these conditions, the tests of that particular sample were considered complete.

Mr. Hall found by a careful collection and weighing of the dust resting on the timbers, after putting down 200 weight, that these timbers afforded a lodgment for about 80 pounds of dust, and he is of opinion that this portion only of the 200 weight put down was exploded, and gave rise to the whole of the phenomena exhibited by the explosions.

When the testing of a sample was complete, one or two what may be called “blank shots” were fired in the shaft to blow out any remnants of dust before the testing of a new sample was commenced.

The phenomena presented by these experiments as they progressed, and a careful examination of the detailed results, warrant Mr. Hall in arriving at the following conclusions:

(1.) That the flame from a blowing-out gunpowder shot in the presence of dry coal dust always ignites more or less of such dust, and so increases the burning and charring effects of the shot. This is proved by the fact that in almost every experiment which did not result in an actual explosion of dust there was nevertheless severe charring of the electric-firing cable for several yards up the shaft, whilst without dust and with a similar charge of explosive no such charring occurred.

(2.) That when a large flame, such as that of a blowing-out gunpowder shot, or the flame from the ignition of a small quantity of fire damp, traverses an atmosphere containing a very moderate quantity of dry coal dust, the dusty atmosphere will explode with great violence, and the explosion will continue on and pass through-

out any length of such atmosphere, its violence and force increasing as it progresses. This is proved by the fact that in nearly every case where the cannon was fired whilst there was dust suspended in the atmosphere of the shaft a violent explosion followed, the force of which was evidently only beginning to be developed as it reached the top of the shaft and escaped, spending itself in the outside air, the flame in some cases attaining a height of 70 feet over the top of the shaft. It is true there were exceptions to this rule, as in the cases of the samples received from the Forest of Dean, Somerset, South Stafford (Great Fenton and West Cannock), Lancashire (Moston), and South Wales anthracite. The difference in the results from these dusts was, Mr. Hall thinks, due to some difference in the character of the coal seams in those districts. There were also partial failures with the samples from Auckland Park and Trimdon Grange (Durham), and from Talk-o'-th'-Hill, Astley, and Tyldesley, and Llanerch, but in these latter cases Mr. Hall is satisfied that a little more perseverance with the tests and a more careful collection of the samples would have resulted in explosions. (*Note*.—In the Haydock experiments, reported in 1890, the dust explosions traveled 200 yards and were evidently increasing in force and violence as they reached the top of the shaft.)

(3.) That coal dust from several seams in different districts, notably those from Glamorgan, Monmouth, Durham, Lancashire, Yorkshire, and Scotland, are almost as sensitive to explosion as gunpowder itself.

(4.) That coal dust is, as a rule, more sensitive to explosion in proportion to its high quality and freedom from impurities.

(5.) That a ready supply of oxygen, such as is supplied by a brisk ventilation, has the effect of making coal dust explosions more probable and more severe.

(6.) That certain high explosives are incapable of igniting or exploding coal dust. It will be noticed in the details of experiments that charges of Roburite, and in two or three cases ammonite, were fired without effect, but as soon as gunpowder was introduced its explosion was followed by violent dust explosions. The difference in the behavior of gunpowder as compared with the high explosives was most impressive and convincing. Of the whole of the dusts tested, that from the Albion colliery, Glamorgan (Aberdare or Merthyr four-foot seam or upper four feet), excelled all others in violence and sensitiveness to explosion, and this seam has the worst history of any in the kingdom, upwards of 1,600 lives having been lost in it by explosions since the year 1845. Indeed, throughout the experiments one could not fail to be struck by the great violence and sensitiveness to explosion exhibited by the samples received from collieries with an unfortunate history as regards explosions.

It was, Mr. Hall thinks, also evident from the experiments that the higher the quality of the coal seam the more liability there is to explosions of dust, and it is singular that the collected history of explosions in mines in past years shows that nearly all sweeping disastrous explosions have happened in seams producing the highest class of coals, such as the Durham Hutton seam, Yorkshire-Barnsley and Silkstone seams, the Lancashire Arley seam, and the South Wales Aberdare four foot and black vein.

With regard to precautionary measures to be taken in the face of these facts, Mr. Hall again urges the total abolition of gunpowder from coal mines, and the substitution of certain high explosives. Many of the largest firms in the country have already of their own motion taken this step.

Mines which are naturally of a dry and dusty character cannot be artificially damped so as to render gunpowder safe, but it is nevertheless imperative, in the absence of gunpowder, that every possible effort should be made, either by watering or removing, to avoid accumulations of dry dust, so that any accidental ignition of

fire damp may be limited in its effects and prevented from developing into a sweeping explosion through the agency of dust.

During the last 20 years an average of 20 persons per annum, or a total of 400 lives, have been lost in the handling alone of gunpowder cartridges, that is, through accidental ignitions by stemming, drilling out, or setting it alight by candle sparks, quite apart from the part it has played in nearly all great colliery explosions. The loss of life from explosions during the past 20 years amounts to 4,098, and it will be much below the mark to say that gunpowder is accountable for 50 per cent. of these explosions, or a total death roll of 2,449 persons.

It is deserving of consideration and experiment to test whether a coal-dust explosion would be stopped in its course by a certain length of roadway being constantly kept in a wet condition. Mr. Hall thinks such a plan would not prove effective, in consequence of what may be termed the pioneering cloud of dust which precedes the flame, and also in consequence of the great explosive force developed by a coal-dust explosion. In three or four experiments, the remnants of dust left in the shaft after an explosion proved sufficient cause for a second explosion.

Below are given the tabulated results of the experiments on five samples of dust, together with analyses of these dusts, and also of the ventilation of the shaft during the progress of the experiments. The following are analyses of five samples of the experimental dusts:

	<i>Volatile.</i>	<i>Coke.</i>	<i>Ash.</i>
Lightmoor colliery. Rocky seam from underground.....	22.8	30.4	46.8
Clifton Hall colliery. Trencherbone from screens.....	20.8	68.4	10.8
Albion colliery. Four-foot seam from underground.....	14.1	80.4	5.5
Barrwood colliery. Kilsyth seam from underground.....	24.7	45.7	29.6
Beamish colliery. Busty seam from screens.....	28.3	67.3	4.4

NOTE.—The dusts from underground roads contain a good deal of shale dust; hence the large quantity of ash.

The following are analyses of the ventilation of the shaft, taken during the progress of the experiments:

Oxygen.....	20.56	Nitrogen.....	79.3
Nitrogen.....	79.20	Oxygen.....	20.5
Carbon dioxide.....	0.15	Carbon dioxide.....	0.2
Sulphur dioxide.....	0.09		
	100.00		100.0

No trace of carbon dioxide or marsh gas found.

THE PHILOSOPHY OF VENTILATION.

Atmospheric air is composed of two gases, oxygen and nitrogen, with the addition of a small portion of carbonic-acid gas. Oxygen is the vital part of the atmosphere, and the supporter of ordinary combustion. It is an elastic fluid, invisible, odorless, and heavier than atmospheric air. Nitrogen is the basis of nitric acid, and the principal ingredient of atmospheric air. In the pure state, it is a colorless gas, wholly devoid of smell and taste. It was first noticed by Doctor Rutherford, in the year 1772. The air contains 23 per cent. of oxygen, and 77 per cent. of nitrogen, by weight, or 21 per cent. of the former, and 79 per cent. of the latter, by volume. Oxygen is the most abundant substance in nature, forming, besides its proportion of atmosphere, 89 per cent. of water, and fully 33 per cent. of the solid matter composing the earth. This gas is the constituent of the air upon which every form of life and light, and all organic substances, are dependent for their existence. Nitrogen will not support life nor light, and cannot even be breathed into the lungs until it has been diluted with oxygen. Neither of these gases has taste, color, or smell.

The atmosphere is a vast ærial ocean, of which the earth is the bottom. This ocean extends upward to a height of about 45 miles, growing gradually thinner in the ascending column. The bottom of the column is pressed by the air from the top downward, which squeezes and contracts it into smaller bulk, and consequently into greater density. At the height of $3\frac{1}{2}$ miles, air is twice as light and elastic as at the level of the sea; and at the height of seven miles, it is four times as light; and so on until it thins out to nothing. A column of air the whole height of the atmosphere, weighs nearly a ton to the square foot; a column an inch square weighing 14.7 pounds. An ordinary-sized man sustains a weight of air of about 14 tons. The pressure of the atmosphere is equal in all directions—upward, downward, lateral, diagonal, etc. Air, in common with all gaseous bodies, is possessed of the property of inertia, which means that it cannot move when in a state of rest, until force is applied to start it and keep it in motion. Whenever the pressure becomes lessened, from whatever cause, on any side of the atmosphere, the pressure on the opposite side pushes it forward in the direction of the place where the pressure has been reduced, and the air commences moving, at a greater or less speed, in proportion to the amount of pressure that has been removed.

Air, on being heated, expands $\frac{1}{459}$ part of its volume for every degree of heat applied to it. The heated, expanded air, becoming lighter, bulk for bulk, flies upwards, while the cool, heavy air presses down to supply the

ascending column. When heat is constantly applied, there is a constant motion of the air. This is the principle of furnace ventilation in mines, still preferred by many, where the mines do not contain gas. However, it should not be preferred, as the furnace fire is often neglected by those having charge of same, and there is much danger of setting fire to the wooden structure in and near the top of the shaft, and very often the furnace or grate fires are built within a few feet and, in many places in Kansas, in the bottom of the upcast shaft.

When two shafts or other openings of the same depth are made into a mine, and the tops and bottoms of both are on the same level, there cannot be any movement of air in the mine, even if the mine air and that of the surface be of different densities, because the pressure of the atmosphere in both shafts is equal; but if one of the shafts is sunk in higher ground, and is, consequently, deeper than the other, there is always a natural motion of the air, provided the temperature of the mine and that of the surface is of different densities.

In winter, when the air of the mine is rarer and lighter than that of the surface, the current tends down the lower opening and up the higher one; and in summer these conditions are reversed, because the cooler column of air is then transferred to the higher opening. At certain seasons of the year, when the atmosphere above ground and that of the mine approach each other in density, there is again no motion, except what may be produced by the action of the cages in the shafts, the movement of the cars along the galleries of the mine, or the direction and force of the wind on the surface. In the language of the miner, "the pits fight"—the ventilating current sometimes going down one shaft or opening and in a few minutes reversing itself and going down the other. But, in such cases, it is weak, and often assumes a state of rest, which causes the miners to suspend work. The powers applied for the purpose of creating and maintaining a constant and necessary current of air in mines, when natural forces failed, used to be many and various.

In Belgium the law forbids the use of a furnace. Exhaust fans have been the favorite ventilating power in the United States since the passage of the mine-inspection law of Pennsylvania, which was enacted shortly after the disaster at the Avondale shaft, located on the bank of the Susquehanna river, four miles from Plymouth, in Luzerne county. In this catastrophe, which occurred on the morning of September 6, 1869, 110 men and boys lost their lives. It was caused by the ventilating furnace setting fire to the woodwork in the shaft.

At present, the ventilation of coal mines is almost entirely effected, in Cherokee, Crawford, Leavenworth and Linn counties, in Kansas, by ventilating fans, which is shown by tables of the various counties in this report. The other coal mines of the state, excepting those small country banks, which only work a few months in winter, are ventilated by means of a fur-

nace, applied in many places at the foot of an upcast shaft, in which an ascending current is produced by rarefaction, as in an ordinary chimney.

In many mines in the state of Kansas the mining law is very defective. The law provides for a second opening, or an escapement shaft. The superintendents and operators of mines which are ventilated by furnaces claim they are complying with the requirements of the mining law as to a second opening. Should the main shaft catch fire, or something unusual happen, which would necessitate the miners to make the upcast, or furnace shaft, the only available means of egress, what would be the result? Every intelligent miner knows it would be impossible, notwithstanding that neither stairway, ladder, windlass, or any other means by which a man could get to the surface in a case of an emergency, is accessible. In discussing the matter with a superintendent of a certain mine, he claimed his shaft was equipped according to the requirements of the law; but when I examined the escapement, the so-called ladder, rudely constructed of a few poles cut along some creek, was temporarily suspended from a crosspiece in the shaft, and hanging over a blazing furnace. On another page in my report, second openings and escapements are described more fully.

Under the mining law of Kansas, the furnace shafts constitute an escapement; which I will treat more fully under the head of recommendations. The mining laws of Kansas provide 100 cubic feet of air per minute per person in all mines where the coal strata are three feet thick or over, which shall be circulated wherever any person or persons shall be working in said mine. This is impossible where coal is mined by room-and-pillar system, unless some provisions are made by law to fill or partition break-throughs between rooms and entries.

TREATISE ON COAL MINES AND THEIR SUPERVISION.

There is no industry in which practical and theoretical knowledge is of more importance than the mining of coal, because of the great danger connected with it. Especially is this true in the shaft mines of southern and eastern Kansas, and particularly so in Leavenworth county, where the only means of egress from the dark and dismal chambers in earth's bosom depends upon hoisting engines and other necessary machinery, which should be handled by capable, practical, careful and sober engineers; and the matter of good judgment should be carefully exercised by men of knowledge and experience as to the strict attention and safety of the most important part which bears the cargo of human freight mornings and evenings, which is absolutely necessary for lowering and hoisting employés into and out of coal mines, and upon which depends, to a certain extent, the lives of those who have to descend 780 feet into the bowels of the earth, viz., the wire or steel rope.

Those who never had occasion to earn their livelihood as miners can form no conception or realization of the dangerous and hazardous occupation of the miners, as their lives depend upon chance from the time they stand upon the cage in the morning until they arrive on top again in the evening.

The difficulties to be encountered in mining are increasing. The requirements of the market are increasing also, with competition, so that management of mines requires more than ordinary ability in a boss or superintendent, who has the lives of those in charge or in his company's employment depending upon him, to a certain extent.

In the interest of safety, the mining laws of Kansas should demand that those having the care and direction of the mines should hold certificates of competency, after passing a satisfactory examination before a board of competent examiners. This board should be composed of operators and practical miners in a like number, and of one civil engineer, all of whom should be familiar with underground workings, both as to how it should be conducted and ventilated. Said board should be vested in theoretical knowledge in regard to ventilation, and have at least seven years' practical experience as to the manner and mode of working the different seams of coal, under an improved system, which would result in a gain for the company and secure the health and safety of those employed in the mines.

By doing as I have quoted, it would be the means of raising the standard of intelligence among those on whom the safety of others to any extent depends. Those whose ambition it is to become bosses, or mine foremen, are generally those who have spent their youth in mines, and whose educa-

tion has been neglected, and, in many cases, their fathers were compelled to take them into the mines through mere necessity and hard times; therefore, the preparation necessary to face a board of examiners is to them a work of great magnitude. Your humble servant, who belongs to the mining element, has had 20 years' experience, and has acquired some knowledge as to the acquirements of the average foreman, or so-called superintendent, who should be qualified in every respect to fill the position he so presumptuously, but most ignorantly, occupies.

There are a few of these superintendents who have acquired knowledge as to how a mine should be conducted in regard to safety, and the manner in which it should be operated to result in a practical gain to the company and to the health and longevity of the miner.

We have superintendents of coal mines in Kansas who never, perhaps, in the course of their lives have seen the working face of a mine. They hire a foreman, or mine boss, to look after the mines, and the first instructions the foreman receives is to cut down expenses and get coal out as cheap as possible. If he fails to comply with these instructions, another man is soon found, who will eagerly take his predecessor's place, and who, in many instances, assumes a lofty air, because that title "pit boss" is conferred upon him.

With a determined resolution he enters the arena of a coal corporation, and, to prove his ability and qualifications beyond a doubt, his first endeavor is to show the company the practical gain which he can render them by his economy and interest in their property, and, particularly, to prove beyond a doubt that his predecessor was a worthless foreman, who did not look after the company's interest. He is everlastingly finding fault with the condition in which his predecessor left the mine, having no knowledge of the instructions by which his predecessor was governed. So he is given an opportunity to try his hand, and if it can be proven, by book accounts, that he has curtailed expenses \$200 or \$300 the first few months, he is, in all cases, preferable to his predecessor, and, to encourage him in his undertakings, his wages may be raised \$5 per month.

At whose expense does this new foreman receive a reputation and an advance of wages? At the overlaiden, oppressed and persecuted miner's. In many mines, particularly in Cherokee and Crawford counties, a scheme of saving to the company is often resorted to, where so much dead work is done; the new foreman, taking advantage of the miners, by reducing in price the cutting of horsebacks, slips, and rolls, brushing of entries, and room turning, dispensing with timber men and water bailers, and reducing in number pushers and drivers, and often setting aside the most important employé in the mine, namely, the man who attends to the supervision of ventilation.

The new foreman makes a great change or show off, assuming also that he can increase the output, but in the course of time he realizes that he has

made a serious mistake. He also finds that the company is contemplating making another change, and he (the foreman) is therefore the victim of the unqualified superintendent, who holds him responsible for the condition of affairs when miners cannot be induced to work under such disadvantages; but, if there is any honor or credit due the foreman, the assuming superintendent who holds such a position very often, by influence, claims that part which is justly due the foreman; therefore, the average foreman trudges along, subjected to the ridicule of the miners and the displeasure of the company.

As to practical and theoretical knowledge, about one-half of the mine bosses or foremen in Kansas are capable and qualified, if they were only empowered to operate and ventilate the mines as they should be. Instead, they are subjected to the dictates of a superintendent who scarcely knows coal from black-jack. The consequences are, timbering is neglected, air courses are not looked after, curtains and doors are not kept in order, break-throughs are not filled and built air-tight, the roofs in entries begin to fall, rooms cave in, stagnant water is allowed to stand in air courses, entries, and at the face of rooms; and that most important matter in mining, and worthy the attention of the foreman, superintendent, and mining student, is neglected and left to take care of itself, viz., ventilation.

It is true, expenses may have been curtailed for a few months; nevertheless the condition of the mine becomes so alarming that the intelligent miner knows when he enters the mine it is at the risk and peril of his life. When he complains about the condition of the mine, very often the foreman or superintendent takes the precautionary step and politely dispenses with his services, at the same time informing the company that such a man was and is a crank and an agitator. Naturally the company believes the official statement of their agent, and consequently the miners, through fear of being discharged, are forced to labor under all these disadvantages.

Such are the indignities and impositions practiced, and the miner's lot in life is not very commendable. However, the companies learn many lessons, only, in many instances, when too late, especially when a misunderstanding exists between their employés and their superintendent, whose repulsive and domineering ways and rulings create uncalled-for suspensions and strikes, causing the mine to undergo an additional expense, and often a depreciation in value, the capacity of which cannot be increased under such circumstances as I have herein enumerated; consequently, the conservative, intelligent, unprejudiced, practical and theoretical foreman or superintendent is the most successful, and the cheapest man that can be employed, giving satisfaction to employers and employés alike.

RECOMMENDATIONS.

Having become convinced that it is imperatively necessary to amend or obliterate many of the worthless mining laws that now appear upon the statutes, I would respectfully request that a penalty be attached to all mining laws made in the future, and to those already enacted where neither fine nor imprisonment is prescribed therein for violation thereof.

Section 6 of chapter 143, Session Laws of 1885, repealed section 4, chapter 117, of Session Laws of 1883, which read as follows:

SEC. 4. Where the natural strata are not safe, every working, pumping and escapement shaft shall be securely case lined or otherwise made secure, and all escapement shafts shall be provided with ladders securely fastened, so as to bear the combined weight of not less than 10 men ascending or descending the same; and where ladders cannot be conveniently used, other safe means of hoisting the persons employed in any such coal mine shall be kept ready, so as to be available in case of any accident to the regular hoisting shaft, or to the machinery in use at the same.

The repealing of this section left no provision nor means of escape by a second opening in case of accident to the main hoisting shaft, thus rendering two of the principal provisions of the law nugatory. This section, or one similar, should be enacted into law as soon as possible.

I would recommend the following:

Where the natural strata are not safe, every working, pumping and escaping shaft shall be securely case lined, or otherwise made secure, and all escapement shafts shall be provided with stairs, securely fastened, so as to bear the combined weight of not less than 15 men, ascending or descending the same; said stairway shall be so constructed as not to exceed 45 degrees of elevation by each section of said stair, and the stairways shall be separately partitioned from the parts of such shafts used as upcasts or downcasts, and the traveling ways between the bottom of the main shaft and escapement shaft or stairway, shall be at least five feet in height. Said traveling ways shall be kept clear of all obstructions, and standing or stagnant water; and where stairways cannot be conveniently used, other safe means of hoisting the persons employed in any such mine shall be kept ready at all times, so as to be available in case of accident to the regular hoisting shaft, or the machinery in use at the same; and it shall be the duty of the foreman, cager, or whoever may have charge of the bottom of any shaft, to give the proper signal to the topman and engineer whenever any six employés who work therein are ready to ascend, by day or night.

The enactment of the foregoing recommendation (as to escapement) is one of the most important and necessary requirements in connection with shaft mines.

BREAK-THROUGHS BETWEEN ROOMS AND ENTRIES.

I would recommend the passage of a law prohibiting entries, air courses, rooms or any other working places in the mine, operated on the room-and-pillar system, to excavate in advance space of 40 feet, unless break-throughs are made between such entries, air courses, rooms, or any other working places, irrespective of the thickness of pillar between such working places, excepting in cases of emergency when air courses are being constructed or connected; and that such break-throughs shall be at least five feet in width and full height of mineral vein, making it obligatory on the operator or his agent to fill or build in the center of all such break-throughs a solid wall of either rock, brick, slate, or a partition of strong boards, securely fastened and made air-tight, as soon as the second or succeeding break-through is made between entries, air courses, rooms, or other working places.

It is impossible to ventilate the working places in a mine operated on the room-and-pillar system unless a law is passed necessitating the closing up of such break-throughs, as every sensible man will acknowledge that the air always takes the nearest and shortest course, leaving the miner at the face, who may be probably 70 or 100, and in some cases 120, feet inside of the course taken by the air when break-throughs are not filled. When the miner is about worn out, he generally retreats to the air way to fill his lungs with a fresh supply, and, when recruited a little, goes back to his working place again, where he labors under a disadvantage, suffering under a languid feeling and a headache, with a pulsation of the heart, and none but those who have had the experience of working in such places know the agony and suffering endured by the miner on all such occasions.

SINGLE-ENTRY SYSTEM.

As the mining law of our state, in its full spirit, was, and is, intended for health and safety, I would recommend the enactment of a law by which coal companies, or individual operators, adopt the system of double entries where coal or mineral is mined on the room-and-pillar system, provided the area of such mine or mineral vein exceeds 20 acres.

It is an indisputable fact that the single-entry system is a complete failure in the maintaining of ventilation, and very injurious to the miners' health, also. Large blocks of coal are very often left when the miner is compelled to vacate his working place, owing to the poorly ventilated condition of his chamber. Consequently, such places receive little, if any, attention, as timbering is neglected; and, in the course of time, those rooms cave in, causing additional danger; as the surface water flows into the mine, particularly after a heavy rain, air ways are closed or filled with water, in many instances, thus leaving the mine in a condition which requires considerable labor and uncalled-for expense to overcome the obstacles which were considered an economic saving. Often portions of the mine are abandoned. I might assign several other reasons justifying abolition of the single-entry

system, which I believe is a detriment to both employer and employé. Happily for all concerned a brighter day has dawned, and more attention is being directed to this important branch of mine management. The fact is impressing itself on the minds of intelligent mine operators that no part of the capital invested yields a higher rate of interest than that which is judiciously expended on ventilation.

SHOT FIRING.

I would recommend the following amendment to section 1, ch. 172, Laws of 1889, "An act to provide for the protection of life and property in and about coal mines:"

All owners, lessees, operators of, or any other person, having the control or management of any coal shaft, slope, drift or pit in the state, employing miners therein, shall employ shot firers to fire the shots therein. Said shots shall not be fired by anyone except by regular shot firers, and once a day only, after the hour of 5:30 P. M., on each day when any such shaft, drift or pit is in operation, except shafts, drifts or pits whose mine openings or excavations have not exceeded 150 feet in distance from the bottom. In opening new mines, shots shall not be fired more than twice a day, and only in mines whose excavations have not exceeded the aforesaid distance, viz, 150 feet from the bottom of such shaft, drift, pit, or slope. All employés working therein shall vacate such mines, and, where necessary, shall be hoisted to the surface, before any shot or shots are fired. Shot firers and all other employés employed therein shall not enter the mine for a period of not less than one hour after shot or shots are fired. Operators, miners, shot firers or others who shall refuse to comply with the provisions of this section shall be deemed guilty of a misdemeanor, and, on conviction thereof, shall be fined a sum of not less than \$50 nor more than \$200 for each offense, or imprisoned in the county jail in the county where such offense is committed for a period of not less than 60 days, or by both such fine and imprisonment. Proceedings to be instituted in any court having competent jurisdiction.

TO ORGANIZE DISTRICTS.

Section 4, chapter 143, Laws of 1885, provides that it shall be the duty of the Inspector to visit each mine in the state at least twice each year. As there are 243 mines in the state, and to make even a cursory inspection of each one would take the greater part of one day, it would require 486 days to comply with the law. As some of the mines in the state are 400 miles apart, and a great many over 200 miles, it can be plainly seen that it is a physical impossibility for one individual to fulfill this requirement of the law as Mine Inspector.

As no provision is made for any assistance, or for office, or for expenses of any kind, not even for postage, which of itself is quite an item, I have (although not empowered to do so) employed assistance in the inspection of

the mines, which had to be paid out of my salary, besides traveling expenses, including livery hire.

It is customary in all other states having mining interests which have district and state inspectors for the legislature to appropriate funds to defray the expense of the office and expenses incurred by the inspector while discharging the duties intrusted to him in his district or state.

I have labored unceasingly to comply with the requirements of my obligation in the discharge of my duties as Mine Inspector. To give the best possible satisfaction, I appointed a deputy, whose supervision extended over one district or territory. In addition to this, I appointed deputies temporarily to attend to any emergency that might arise in my absence, causing an additional expense, which has been paid out of the limited compensation of the Inspector. I am convinced that it is utterly impossible for one Inspector to perform the duties assigned to him by law.

Therefore, I would recommend that the mineral-producing counties of the state be divided into three different and separate districts, including salt, lead and zinc and gypsum producing counties, appointing an inspector for each district or territory, whose compensation shall be regulated by the legislature of the state. One of these inspectors shall have full supervision over the entire mining district of the state, whose duties shall be as prescribed by the present mining law.

The mining interests of the state are becoming so important that the question of the qualifications and ability of the Mine Inspector should be put beyond a cavil or doubt. Therefore, I would suggest the passage of a law embodying the features set forth in the following from the mining law of Iowa, under which the chief inspector of the state of Kansas should qualify:

The executive council shall appoint a board of examiners composed of two practical miners, two mine operators, and one mining engineer, who shall have at least five years' experience in his profession. The members of said board shall be of good moral character, and citizens of the United States and state of Iowa, and they shall, before entering upon their duties, take the following oath (or affirmation): "I, _____, do solemnly swear (or affirm) that I will perform the duties of examiner of candidates for the office of Mine Inspector to the best of my ability, and that, in recommending any candidate, I will be governed by the evidence of qualification to fill the position under the law creating the same, and not by any consideration to political or personal favors; that I will grant certificates to candidates according to their qualifications and the requirements of the law." They shall hold their office for two years.

Said board shall meet biennially, on the first Monday in April of each even-numbered year, except that for the year 1888 said board shall meet on the second Monday, in the office of the State Mine Inspector, at the capitol, and they shall publish in at least one newspaper published in each mining district of the state the date fixed by them for the examination of candidates. They shall be furnished with the necessary stationery and other necessary material for said examination, in the same manner as other state officers are now provided. They shall receive as compensa-

tion the sum of \$5 per day for time actually employed in the duties of their office, and actual traveling expenses. The said compensation and expenses shall be paid in the same manner as the salaries and expenses of other state officers are now paid: *Provided*, That in no case shall the per diem received by any member exceeds \$50 for each biennial session.

Certificates of competency shall be granted only to citizens of the United States and state of Iowa, of good moral character, not less than 25 years of age, who shall have at least five years' experience in the mines, and who shall not have been acting as agent or superintendent for any mine for at least six months prior to their appearance for examination.

The examination of candidates for the office of Mine Inspector shall consist of oral and written questions in theoretical and practical mining and mine engineering, on the nature and properties of noxious and poisonous gases found in mines, and on the different systems of working and ventilating of coal mines. The candidates shall not be allowed to have in their possession, at the time of their examination, any books, memoranda or notes to be used as aids in said examination. The board of examiners shall give to all persons examined who, in their judgment, possess the requisite qualifications, certificates of such qualifications; and from the persons holding such certificates the governor shall appoint the State Mine Inspector.

SCALES.

Much dissatisfaction exists among miners, at times, at mines where the coal is weighed before being credited to them, in regard to the alleged inaccuracy of the scales. They complain that the scales do not weigh accurately, and that they are being cheated out of their earnings by this means. I will not attempt to vouch for the truth of such complaints. It may only be the miner's suspicion, and it may be true. However, it would be a great satisfaction to the miner, and I do n't think would be disapproved by the operators, if the legislature would pass a law giving some person authority to act as sealer of weights and measures for the coal miners. In some states the inspectors are given this authority, with the instruments and weights necessary to act as such. A separate fund is appropriated to defray the expense incurred through hauling the weights, etc., from one mine to another. Such a law should be passed in this state, with due regard to the present duties of the Inspector, which would bring about a better feeling between miner and operator in this respect.

PILLARS LEFT.

I would recommend that not less than 25 feet of a solid pillar or body of coal, or other mineral mined therein, be left standing in advance of every working place, when the same is driven toward and in dangerous proximity to any abandoned mine suspected of containing inflammable gases or which is inundated with water.

The most necessary and requisite recommendations are herein submitted to the consideration and approval of our honorable legislators.

MINING LAWS OF KANSAS.

GENERAL LAW.

[General Statutes of 1889, ch. 66a, pp. 1093-1103.]

SECTION.

1. Escapement shaft.
2. Construction.
3. Penalty.
4. Obstructions, etc.
5. Terms defined.
6. Protection of owners.
7. Survey.
8. Injunction.
9. Proceedings.
10. Ingress and egress.
11. Cities may contract.
12. Certain contracts.
13. Construction.
14. Survey drifts, when.
15. Read order.
16. Persons refusing.
17. Map or plan.
18. Opening; penalty; metal tubes, etc.
19. Steam and water gauge.

SECTION.

20. Ventilation; fire damp.
21. Overseer, duties; manholes.
22. Explosions.
23. Abandoned shaft.
24. Inspector; term; compensation.
25. Bond.
26. Ineligible.
27. Violating act.
28. Duties of Inspector; record.
29. Enter mines; injunction; costs.
30. Loss of life, or injury.
31. Penalty.
32. Minors.
33. Terms defined.
34. Repeal.
35. Shot firers.
36. Conditions.
37. Managers; penalty.
38. Miners; penalty.

Escapement Shaft. SECTION 1. That the owner or owners or lessee of each and every coal mine or colliery in this state, which is worked by means of a shaft, shall make and construct an escapement shaft, making at least two distinct means of ingress and egress for all persons employed or permitted to work in such coal mine or colliery. Such escapement shaft, or other communication with a contiguous mine, shall be constructed in connection with every stratum of coal worked in such coal mine or colliery; and every escapement shaft or other communication with a contiguous mine, as aforesaid, shall be so constructed as to be accessible from every entry, plane or level in said coal mine or colliery, in case of a fire or other accident to the main shaft: *Provided*, That the provisions of this law shall not apply to the coal mine at Leavenworth until the chambers, drifts or passages shall have reached the east side of the Missouri river.

Construction. SEC. 2. That the time allowed for such construction shall be four months for the first 50 feet or fractional part thereof, and three months for each and every additional 50 feet in depth of said escapement shaft so to be constructed. And every such escapement shall be separated from the main shaft by at least 100 feet of natural strata; and all owners of coal mines or collieries that are in operation before the passage of this act shall, on or before the 1st day of July, A. D. 1875, proceed to construct such escapement shaft or other communication with a contiguous mine as aforesaid.

Penalty. SEC. 3. Any owner or owners or lessee of any coal mine or colliery, who shall neglect or refuse to comply with sections 1 and 2 of this act, shall be deemed guilty of misdemeanor, and subject to a fine of not less than \$100 nor more than \$1,000, or by imprisonment in the county jail not more than three months, or by both such fine and imprisonment.

Obstructions, etc. SEC. 4. Any miner, workman or other person who shall knowingly obstruct or throw open any air ways, or carry lighted lamps into places that are worked by the light of safety lamps, or shall move or disturb any part of the machinery of the hoisting engine, or whim, or open a door in the mine, and not have the same closed again, whereby danger is produced either to the mine or those at work therein, or who shall enter into any part of the mine against caution, or who shall disobey any order given in pursuance of this act, or who shall do any willful act whereby the lives and health of persons working in the mine, or the security of the mine or miners, or the machinery thereof is endangered, shall be deemed guilty of a misdemeanor, and upon conviction shall be punished by fine or imprisonment, at the discretion of the court.

Terms Defined. SEC. 5. The terms "owner" or "owners" or "lessee," as used in this act, shall include the immediate proprietor, lessee or occupier of any coal mine or colliery, or any person having, on behalf of any owner or owners or lessee as aforesaid, the care and management of any coal mine or colliery, or any part thereof.

Protection of Owners. SEC. 6. Whenever an affidavit properly verified by the person aggrieved, or his agent or attorney, shall be presented to the district court of the proper county, during term time, or to the judge thereof in vacation, in which it shall be made to appear that such person shall have good reason to believe that any other person or persons, corporation or corporations, are without authority encroaching upon the land of the person aggrieved, whether the same be held by lease or otherwise, and are mining, or taking coal therefrom, it shall be the duty of the said court, or judge, to order and direct the county surveyor to survey the mines or mines, of the person or persons, corporation or corporations, accused thereof, for the purpose of ascertaining the truth thereof; the party applying for such survey to first give bond in such a sum as may be deemed sufficient by said court, or judge, and the same to be at the time approved by said court or judge, conditioned for the payment of the costs of said survey.

Survey. SEC. 7. Upon the making of such order and approval of said bond, it shall be the duty of the county surveyor to forthwith make such survey, and to file his written report thereof with the clerk of such district court.

Injunction. SEC. 8. When it shall be made to appear by petition verified by the oath of the plaintiff, his agent or attorney, and by the survey of the county surveyor, that any person or persons, corporation or corporations, is or are, without authority, mining or taking coal from the land of the plaintiff, whether held by lease or otherwise, it shall be the duty of the proper district court in term time, or the judge thereof in vacation, to grant a temporary injunction restraining such person or persons, corporation or corporations, from mining or taking coal from such land until the further order of the court or judge.

Proceedings. SEC. 9. The proceedings in such cases shall be in all respects similar to the course of procedure in actions for injunction.

Ingress and Egress. SEC. 10. It shall be the duty of every person or corporation owning coal mines, and every person in charge of the same, to provide the county surveyor with all the ordinary means of ingress and egress to make any survey thereof he may be ordered to make; and any person or persons in any way interfering, molesting or hindering such county surveyor in making any survey he may be ordered to make under the provisions of this act, shall be guilty of a misdemeanor, and shall be liable for each offense to a fine of not less than \$10 and not more than \$100, to be prosecuted and recovered as in other cases of misdemeanor.

Cities May Contract. SEC. 11. That any city of the first or second class, in which an organized coal company shall exist, may by ordinance, contract with such company for the exclusive and perpetual right to mine beneath the streets, alleys and public grounds thereof, upon the agreement to pay one-fourth a cent per bushel upon each and every bushel raised by said company; one-half of which amount shall be paid into the general fund of said city, and the other half shall be paid to the treasurer of the state in aid of the school fund.

Certain Contracts. SEC. 12. Any coal company which shall have heretofore attained by ordinance from any city of the first class a contract for the exclusive right to mine under the streets, alleys and public grounds thereof, shall be entitled to the priority, exclusion and perpetuity of such ordinance, which is hereby validated and confirmed: *Provided*, That within 30 days after the passage of this act such company shall file with the secretary of state their consent thereto and stipulate to pay amount specified in the first section hereof and to comply with the conditions named in the ordinance.

Construction. SEC. 13. That nothing in this act shall be construed to relieve such company from making compensation to the owners of private property for any injury done in mining operations.

Survey Drifts, When. SEC. 14. When any owner, tenant or subtenant of a lot or lots or tract of land shall file with any justice of the peace within the county in which said lot or lots or tract of land may be situated, his or her affidavit, or the affidavit of any other creditable person for them, stating, that from knowledge, information, or belief, the party or parties owning, controlling or working the adjoining lot or lots or tract of land, and upon which said party or parties are sinking shafts, mining, excavating and running drifts, and that said drifts, in which said parties are digging, mining and excavating any mineral ore or veins of coal, extend beyond the lines and boundaries of said lot or lots or tract of land owned, controlled or worked by them, and have entered into and upon the premises of the party or parties making said affidavit, or for whom said affidavit is made, the justice of the peace, after first being tendered his lawful fees, shall issue

his written order, and deliver or cause the same to be delivered to the county surveyor or his deputy, commanding him, after his reasonable fees have been tendered, to proceed without delay to survey said drift, by entering any and all shafts upon said lot or lots or tract of land, that he, the surveyor, may see fit, for the purpose of ascertaining the course and distance of said drift or drifts, and to locate the same upon the surface.

Read Order. SEC. 15. The surveyor shall, before entering upon said duties, read said order to the party or parties owning, controlling or working any shaft or shafts on said lot or lots or tract of land.

Persons Refusing. SEC. 16. If any person shall refuse, hinder or prevent said county surveyor or his deputy and his assistants from entering said shaft or shafts or drifts to make the survey so ordered by the justice of the peace, said person or persons so offending shall on conviction be adjudged guilty of a misdemeanor, and punished by imprisonment in the county jail for a term of not exceeding one year, or by fine not exceeding \$300, or by both such fine and imprisonment.

Map or Plan. SEC. 17. That the owner, agent or operator of every coal mine shall make or cause to be made within six months after the passage of this act, an accurate map or plan of the workings of such coal mine, and each and every vein thereof, on a scale not exceeding 100 feet to the inch, and showing the bearings and distances, which shall be kept in the office of such coal mine; and it shall be the duty of the owner, agent or operator of such coal mine to furnish the State Inspector with a true copy of said map or plan, the same to be deposited at his office. And such owner, agent or operator shall cause, on or before the 10th day of July of each year, a plan of the progress of the workings of such coal mine during the year past to be marked on the original map or plan of the said coal mine, and the Inspector shall correct his map or plan of said workings in accordance with the above plan or map thus furnished. And when any coal mine is worked out or abandoned, the fact shall be reported to the Inspector, and the map or plan of such coal mine in his office shall be carefully corrected and verified: *Provided*, If the owner, agent or operator of any coal mine shall neglect or refuse, or for any cause fail, for the period of two months after the time prescribed, to furnish the said map or plan as hereby required, or if the Inspector shall find, or have reason to believe, that any map or plan of any coal mine furnished in pursuance of this act is materially inaccurate or imperfect, he is hereby authorized to cause a correct map or plan of the actual workings of said coal mine to be made at the expense of the owner, agent or operator thereof, the cost of which shall be recovered from said owner, agent or operator as other debts are recoverable by law: *Provided*, That if the map or plan which the Inspector claimed to be incorrect shall prove to have been correct, then the aforesaid expense shall be paid by the Inspector.

Opening; Penalty; Metal Tubes, etc. SEC. 18. It shall not be lawful,

after six months from the passage of this act, for the owner, agent or operator of any coal mine to employ any person at work within said coal mine, or permit any person to be in said coal mine for the purpose of working therein, unless they are in communication with at least two openings, separated by natural strata of not less than 80 feet in breadth if the mine be worked by shaft or slope, and if worked by drift not less than 50 feet: *Provided, however,* That such coal mine shall not exceed 100 feet in depth, from the surface to the coal; and for every additional 100 feet, or fractional part thereof, six months additional time will be granted; but in all cases the number of men shall be limited not to exceed 25 until the second opening is perfected and made available; and a roadway to the same shall be kept open, not less than three feet high and four feet wide, thereby forming a communication as contemplated in this act, but the limit herein prescribed as to the number working in the shaft before the completion of the second opening shall not apply to mines exceeding 700 feet in depth. And for a failure to do as provided in this section, the owner, agent or operator shall be subject to the penalty provided for in section 31 of this act. And in case furnace ventilation being used before the second opening is reached, the furnace shall not be within 40 feet of the foot of the shaft, and shall be secured from danger from fire by brick or stone walls of sufficient thickness; and the flues shall be composed of incombustible material to an extent of not less than 30 feet from the furnace and the mine while being driven for making or perfecting a second opening. In all cases where the human voice cannot be distinctly heard, the owner, agent or operator shall provide and maintain a metal tube from the top to the bottom of the shaft or slope, suitably adapted to the free passage of sound, through which conversation may be held between persons at the bottom and top of such shaft or slope; and there shall also be maintained the ordinary means of signaling to and from the bottom and top of such shaft or slope. In all mines of 100 feet in depth or over from the surface of the ground an improved safety catch shall be used, and sufficient horns or flanges shall be attached to the sides of the drum of every machine that is used for lowering or hoisting persons into and out of said mine where steam is used, and adequate brakes shall be attached thereto. The main link attached to the swivel of the wire rope shall be made of the best quality of iron, and shall be tested by weights or other means satisfactory to the Inspector of Mines of the state; and bridle chains shall be attached to the main link from the crosspieces of the cage, and no single-link chain shall be used for lowering or raising persons into or out of said mine; and not more than six persons shall be lowered or hoisted by the machinery at any one time; and only sober, competent and experienced engineers shall be employed, and said engineer shall have attained at least the age of 18 years; and on no account shall any coal be hoisted, or timber or any other material sent up or down, or empty cars, while persons are descending into or ascending out of said mine. In all

coal mines hereafter opened, or that shall hereafter go into operation in the state, the owner thereof, or owner, lessee, agent or operator shall construct such escapement shaft as is now required by law in this state, at the rate of 50 feet every six months until such escapement shaft shall have been fully completed; and until such escapement shaft is fully completed and connected with the main shaft, it shall be unlawful to work over 25 men in said mine: *Provided further*, That the number of men to be employed in any mine 700 feet deep or more prior to the time when a second or air shaft is sunk, shall be designated by the State Mine Inspector after a careful examination of all the conditions as to the safety and health of the men in the mines.

Steam and Water Gauge. SEC. 19. Every steam boiler used in or around the coal mines of this state shall be provided with a proper steam gauge and water gauge, to show respectively the pressure of steam and the height of water in the boiler, and to be also provided with a proper safety valve; and the owner, agent or operator shall have the said boiler or boilers examined and inspected by a competent boiler maker, or other qualified person, once in every six months, and the result of every examination shall be certified in writing, and conveyed to the mine inspector to be filed in the records of his office.

Ventilation; Fire Damp. SEC. 20. The owner, agent or operator of every coal mine, whether shaft, slope, or drift, shall within six months after the passage of this act provide and thereafter maintain for every such mine ample means of ventilation, affording 100 cubic feet of air per minute per person in all mines where the coal strata are three feet thick or over, and a proportionate amount for thinner strata, which shall be circulated wherever any person or persons may be working in said mine. The Inspector may increase the amount when necessary, to such an extent as will dilute, carry off and render harmless the noxious gases generated therein; and all mines generating fire damp shall be kept free of standing gas, and every working place shall be carefully examined every morning with a safety lamp by a competent person, before any workman is allowed to enter therein; and it shall be the duty of the owner, agent or operator of every coal mine to provide and maintain air ways of sufficient dimension to supply the requisite amount of air.

Overseer; Duties; Manholes. SEC. 21. In order to better secure the proper ventilation of every coal mine, and promote the health and safety of the persons employed therein, the owner, agent or operator shall employ a competent and practical inside overseer, to be called "mining boss," who shall keep a careful watch over the ventilating apparatus, the air ways, traveling ways, pumps and pump timbers and drainage, and shall see that as the miners advance their excavations all loose coal, slate and rock, overhead, are carefully secured against falling in upon the traveling ways. And every underground plane on which persons travel, worked by self-

acting pulleys, engines, windlasses or machinery of whatever description, shall be provided with proper means of signaling between the stopping places and the ends of the plane; and shall furthermore be provided in every case, at intervals of not more than 30 feet, with sufficient manholes for places of refuge. And every road on which persons travel underground, where the coal is drawn by mules or other animals, shall be provided, at intervals of not more than 60 feet, with sufficient manholes for places of refuge. And every mine shall be supplied with sufficient prop timber, of suitable length and size for the places where it is to be used, and kept in easy access to. And it shall also be the duty of the mining boss to measure the air current at least once per week at the inlet and outlet, and at the face of the workings, and keep a record of such measurements, and report the same to the Inspector of the state once in every month. The safety lamps used for examining mines, or which may be used for working therein, shall be furnished by and be the property of the owner of said mines, and shall be in charge of the agent of such mine. And in all mines generating explosive gases, the doors used in assisting or directing the ventilation of the mine shall be so hung and adjusted that they will close themselves, or be supplied with springs or pulleys so that they cannot be left standing open; and bore holes shall be kept, not less than 12 feet in advance of the face of every working place, and when necessary, on the sides, if the same is driven toward and in dangerous proximity to an abandoned mine suspected of containing inflammable gases, or which is inundated with water.

Explosions. SEC. 22. It shall be unlawful for any miner or other person to take into or have in his possession in any coal mine shaft, slope or pit in this state more than $12\frac{1}{2}$ pounds of powder, or any other explosive substance, at any one time; and all such powder or other explosive substance shall be kept in a tight box, securely locked, and such boxes shall be kept at least 20 yards from the working face in all such coal mine slopes, drifts, or pits; and it shall be the duty of all pit bosses or other persons who shall be in charge or control of any coal mine slope, drift, or pit in this state, to keep watch over and see that the provisions of this act are complied with; and any person violating or neglecting to comply with the provisions of this act shall be deemed guilty of a misdemeanor, and shall, on conviction before any court having jurisdiction thereof, be fined in any sum not less than \$10 nor more than \$50, or by imprisonment in the county jail not more than 30 days, for each and every such offense; and the possession of more than $12\frac{1}{2}$ pounds of powder or any other explosive substance in such coal mine, slope or drift, shall be *prima facie* evidence of the person taking said powder or other explosive substance into such mine, slope or drift. Any miner, workman or other person, who shall intentionally injure any safety lamp, instrument, air way, brattice, or obstruct or throw open air ways, or

carry lighted lamps, pipes or matches into places worked by the light of safety lamps, or shall move or disturb any part of the machinery, or who shall open a door and not close it again, or enter any place of the mine against caution, or disobey any order given in carrying out the provisions of this act, or who shall do any willful act whereby the lives or health of persons or the security of the mine or the machinery is endangered, shall be guilty of a misdemeanor, and on conviction shall be punished by a fine or imprisonment, at the discretion of the court.

Abandoned Shaft. SEC. 23. All machinery about mines, and the entrance of every abandoned shaft or slope, shall be properly fenced off, and the top of each shaft and each landing of the same shall be fenced around with a fence not less than three feet high on every side, except the side or sides used for loading and unloading the cages, and this side or sides shall have gates or bars, which shall be kept closed at all times except during the active use of the cages at these places; and there shall be cut in the side of every hoisting shaft at the bottom thereof a traveling way sufficiently high and wide to enable persons to pass the shaft in going from one side of the mine to the other without passing over or under the cages or other hoisting apparatus.

Inspector; Term; Compensation. SEC. 24. As soon as practicable after the passage of this act, the governor of the state, with the advice and consent of the executive council, shall appoint a qualified person to be Inspector of Mines, provided for in this act. The qualifications for said office of Inspector of Mines shall be as follows, namely: He shall be a citizen of the United States, and shall have resided in the state of Kansas for two years, of temperate habits, of good repute, a man of personal integrity, shall have attained the age of 30 years, and shall have had at least five years' experience working in and around coal mines; and he shall furnish evidence of such practical as well as theoretical knowledge of the working of coal mines and noxious gases as will satisfy the governor and executive council of his capacity and fitness for the performance of the duties imposed upon an inspector of mines by the provisions of this act. His commission shall be for two years, to be computed from the 30th of June next. As often as vacancies occur by death, resignation or otherwise, in said office of Inspector of Mines, the governor, in the same manner, shall fill the same by appointment for the unexpired term. Nothing in this act shall be construed to prevent the reappointment of any Inspector of Mines. The Inspector of Mines shall receive for his services an annual salary of \$2,000, to be paid in installments at the end of each quarter, by the state treasurer. He shall reside in the state, and keep an office as centrally located as practicable to the mining districts of the state. The executive council is hereby authorized to procure such instruments and chemical tests and stationery, from time to time, as may be necessary for the Inspector in the proper discharge of his duties, under this act, at the expense of the state, which shall be paid

by the state treasurer, upon accounts duly certified by the executive council and audited by the auditor of the state. All the instruments, plans, book memoranda, notes, etc., pertaining to the office, shall be the property of the state, and shall be delivered to his successor in office.

Bond. SEC. 25. The Inspector of Coal Mines shall, before entering upon the discharge of his duties, give bond in the sum of \$3,000, with sureties to be approved by the executive council, conditioned for the faithful discharge of his duty, and take an oath (or affirmation) to discharge his duty impartially and with fidelity, to the best of his knowledge and ability.

Ineligible. SEC. 26. No person who shall act as a manager or agent of any coal mine, or as a mining engineer, or be interested in operating any coal mine, shall at the same time act as an inspector of coal mines under this act.

Violating Act. SEC. 27. For any injury to person or property occasioned by any violation of this act, or any willful failure to comply with its provisions by any owner, lessee or operator of any coal mine or opening, a right of action against the party at fault shall accrue to the party injured for the direct damage sustained thereby; and in any case of loss of life by reason of such violation or willful failure, a right of action against the party at fault shall accrue to the widow and lineal heirs of the person whose life shall be lost, for like recovery of damages for the injury they shall have sustained.

Duties of Inspector; Record. SEC. 28. The Inspector of Mines shall devote the whole of his time to the duties of his office. It shall be his duty to examine each mine in the state as often as possible, and at least twice each year, to see that all the provisions of this act are observed and strictly carried out; and he shall make a record of all examinations of mines, showing the condition in which he finds them, the number of persons employed in and about each mine, the extent to which the law is obeyed, the progress made in the improvements sought to be secured by the passage of this act, the number of accidents and deaths resulting from injuries received in the mines, and all other facts of public interest concerning the condition and progress of mining in this state. In order to facilitate the Inspector in his duties, it shall be the duty of all coal operators to make quarterly statements to the Inspector of the amount of coal mined, and the number of miners and other persons employed around the mines each quarter. The Inspector's record and all matters concerning the coal-mining business of public interest, shall be embodied in the Inspector's annual report made to the governor on the first day of February each year.

Enter Mines; Injunction; Costs. SEC. 29. That the Inspector may be enabled to perform the duties here imposed on him, he shall have the right at all times to enter any coal mine to make examination or obtain information. He shall notify the owners, lessees or agents immediately of the discovery of any violations of this act and of the penalty imposed thereby for

such violation; and in case of such notice being disregarded for the space of 10 days, he shall institute a prosecution against the owner, owners, lessee or agent of the mine, under the provisions of section 16 of this act. In any case, however, where in the judgment of the inspector delay may jeopardize life or limb, he shall at once proceed to the mine where the danger exists and examine into the matter, and if after full investigation thereof he shall be of the opinion that there is immediate danger, he shall apply in the name of the state to the district court of the county in which the mine may be located, or to the district judge in vacation, for an injunction to suspend all work in and about such mine; whereupon said court, or judge in vacation, if the cause appears to be sufficient, after hearing the parties and their evidence as in like cases, shall issue a writ to restrain the working until all cause of danger is removed. And the cost of said proceedings, including the charges of attorney prosecuting said application, shall be borne by the owner of the coal mine: *Provided*, That no fee exceeding the sum of \$25 shall be taxed in any one case for the attorney prosecuting such case: *Provided further*, That if said court (or judge in vacation) shall find the cause not sufficient, then the case shall be dismissed, and the cost shall be borne by the state or county, in the discretion of the court (or judge in vacation).

Loss of Life, or Injury. SEC. 30. Whenever, by reason of any explosion or other accident in any coal mine, or the machinery connected therewith, loss of life or serious personal injury shall occur, it shall be the duty of the person having charge of such coal mine to give notice thereof forthwith to the Inspector, and, if any person is killed thereby, to the coroner of the county, who shall give due notice of the inquest to be held. It shall be the duty of the Inspector upon being notified as herein provided, to immediately repair to the scene of the accident, and make such suggestions as may appear necessary to secure the future safety of the men; and if the results of the explosion do not require an investigation by the coroner, he shall proceed to investigate and ascertain the cause of the explosion or accident, and make a record thereof, which he shall file as provided for; and to enable him to make the investigation, he shall have power to compel the attendance of persons to testify, and to administer oaths or affirmations. The cost of such investigation shall be paid by the county in which the accident occurred, in the same manner as costs of inquests held by the coroner or justices of the peace are paid.

Penalty. SEC. 31. Any owner or owners, lessee, agent or operator of any coal mine who shall neglect or refuse to comply with sections 17, 18, 19, 20, 21 and 23 of this act, shall be deemed guilty of a misdemeanor, and subject to a fine of not less than \$100 nor more than \$1,000, or by imprisonment in the county jail not more than three months, or by both such fine and imprisonment. All penalties recovered under this act shall be applied, in the county in which the fine is collected, to the support of common schools.

Minors. SEC. 32. No person under 12 years of age shall be allowed to work in any coal mine, nor any minor between the ages of 12 and 16 years unless he can read and write and furnish a certificate from a school teacher, which shall be kept on file, showing that he has attended school at least three months during the year; and in all cases of minors applying for work, the agent of such coal mine shall see that the provisions of this section are not violated; and upon conviction of a willful violation of this section of this act, the agent of such coal mine shall be fined in any sum not to exceed \$50 for each and every offense.

Terms Defined. SEC. 33. The terms "owner," "owners," "lessee," "agent," or "operator," as used in this act, shall include the immediate proprietor, lessee or occupier of any coal mine, or any person having on behalf of any owner or owners, or lessee, as aforesaid, the care and management of any coal mine, or any part thereof.

Repeal. SEC. 34. All acts or parts of acts in conflict with any of the provisions of this act are hereby repealed. (Laws of 1883, ch. 117, §19.)

Shot Firers. SEC. 35. All owners, lessees, operators of, or any other person having the control or management of any coal shaft, slope, drift or pit in this state employing miners to work therein, shall employ shot firers to fire the shots therein. Said shots shall be fired once a day on each day when any such shaft, slope, drift or pit is in operation, but shall not be fired until after all miners and other employés working therein shall have been hoisted out of said mine.

Conditions. SEC. 36. It shall be unlawful for any miner or any other person other than the shot firers provided for in section 35 this act to fire any shot in any coal shaft, slope, drift or pit in this state. Any miner or other person engaged in mining coal in this state who shall drill any hole or fire any shot in the coal vein at the working face of any room or entry until so much of said coal vein at said working face as the said shot or shots are intended to throw down shall have been undermined to the depth of not less than two feet, or sheared or cut to the full depth of the drill or shot hole and the full thickness of vein in entries, or who shall so direct the drilling of such holes as to include between such shearing or mining and the back or rear end of the hole a greater width of coal than is contained between such shearing or mining and the mouth of the hole, shall be deemed guilty of a misdemeanor, and fined as hereinafter provided.

Managers; Penalty. SEC. 37. Any owner, lessee, operator, or other person having the control or management of any coal shaft, slope, drift or pit, who shall refuse to furnish the shot firers, as provided for in section 36 of this act, shall be deemed guilty of a misdemeanor, and on conviction therefor shall be fined in any sum not less than \$50 nor more than \$200 for each offense, or imprisonment in the county jail in the county where such offense is committed for a period not to exceed 30 days, or by both such fine and imprisonment; proceedings to be instituted in any court having competent jurisdiction.

Miners; Penalty. SEC. 38. Any miner or other person who shall fire any shot in violation of section 36 of this act shall be deemed guilty of a misdemeanor, and on conviction therefor shall be fined in any sum not less than \$50 nor more than \$200, or imprisonment in the county jail in the county where such offense is committed not to exceed 30 days, or by both such fine and imprisonment; proceedings to be instituted in any court having competent jurisdiction.

WEIGHING OF COAL AT THE MINE.

AN ACT to regulate the weighing of coal at the mine.

[Session Laws of 1893, ch. 188, p. 271.]

SECTION.

1. Screen.
2. Weighman.
3. Miners can employ check weighman.

SECTION.

4. Scales.
5. Annulment of this act void.
6. Shall apply to all workers.

Screen. SECTION 1. It shall be unlawful for any mine owner, lessee or operator of coal mines in this state, employing miners at bushel or ton rates, or other quantity, to pass the output of coal mined by said miners over any screen or other device which shall take any part from the value thereof before the same shall have been weighed and duly credited to the employés and accounted for at the legal rate of weights as fixed by the laws of Kansas.

Weighman. SEC. 2. The weighman employed at any mine shall subscribe an oath or affirmation, before a justice of the peace or other officer authorized to administer oaths, to do justice between employer and employé, and to weigh the output of coal from mines in accordance with the provisions of section 1 of this act. Said oath or affirmation shall be kept conspicuously posted in the weigh office, and any weigher of coal, or persons so employed, who shall knowingly violate any of the provisions of this act, shall be deemed guilty of a misdemeanor, and upon conviction, shall be punished by a fine of not less than \$25 nor more than \$100 for each offense, or by imprisonment in the county jail for a period not to exceed 30 days, or by both such fine and imprisonment.

Miners Can Employ Check Weighman. SEC. 3. The miners employed by or engaged in working for any mine owner, operator or lessee in this state shall have the privilege, if they so desire, of employing at their own expense a check weighman, who shall have like rights and privileges in the weighing of coal as the regular weighman, and be subject to the same oath and penalties as the regular weighman.

Scales. SEC. 4. Any person or persons having or using any scale or scales for the purpose of weighing the output of coal at mines, so arranged or constructed that fraudulent weighing may be done thereby, or who shall knowingly resort to or employ any means whatever, by reason of which such coal is not correctly weighed and reported in accordance with the pro-

visions of this act, shall be deemed guilty of a misdemeanor, and shall, upon conviction, for each offense be punished by a fine of not less than \$200 nor more than \$500, or by imprisonment in the county jail for a period not to exceed 60 days, or by both such fine and imprisonment.

Annulment of this Act Void. SEC. 5. Any provisions, contract or agreement between mine owners or operators thereof and the miners employed therein, whereby the provisions of section 1 of this act are waived, modified, or annulled, shall be void and of no effect; and the coal sent to the surface shall be accepted or rejected, and if accepted shall be weighed in accordance with the provisions of this act; and right of action shall not be invalidated by reason of any contract or agreement.

Shall Apply to all Workers. SEC. 6. The provisions of this act shall also apply to the class of workers in mines known as loaders, engaged in mines wherein mining is done by machinery. Whenever the workmen are under contract to load coal by the bushel, ton, or any quantity the settlement of which is had by weight, the output shall be weighed in accordance with the provisions of this act.

WEEKLY PAYMENT OF WAGES.

AN ACT providing for the weekly payment of wages in lawful money of the United States by certain corporations, and providing a penalty for the violation thereof.

[Session Laws of 1893, ch. 187, p. 270.]

SECTION.

1. Paid not later than Friday.
2. Penalty.
3. Employé discharged.
4. Employé may recover penalty.

SECTION.

5. Evasion of this act void.
6. Contractor; corporation liable to employé of.
7. Lawsuit for recovery.

When to be Paid. SECTION 1. All private corporations doing business within this state, except all steam surface railways and except corporations engaged in the production of farm and dairy products, shall pay to their employés the wages earned each and every week in lawful money of the United States, and all such wages shall be due and payable and shall be paid by such corporation not later than Friday of each week for all such wages earned the preceding week.

Penalty. SEC. 2. Whenever such corporation fails to pay any of their employés, as provided in section 1 of this act, then a penalty shall attach to such corporation and become due to such employés, as follows: A sum equivalent to a penalty of 5 per cent. per month as liquidated damages, and such penalty shall attach and become a judgment in any court of competent jurisdiction, and the penalty shall continue in full force and effect including all the time intervening up to time of final payment.

Employé Discharged. SEC. 3. Whenever any employé is discharged from the employ of any such corporation, then the wages of such employé shall

become due and payable in the same manner as heretofore described in section 2.

Employé May Recover Penalty. SEC. 4. Any employé may recover all such penalties that may, by violations of sections 2 and 3 of this act, have accrued to him at any time within six months succeeding such default or delay in the payment of such wages.

Evasion; Contract Void. SEC. 5. Any contract or agreement made between any such corporation and any parties in its employ, whose provisions shall be in violation, evasion or circumvention of this act, shall be unlawful and void in its effects as to such corporations.

Contractor. SEC. 6. Whenever any such corporation shall contract any or all its work to any contractor, then it shall become the duty of such corporation to provide that the employés of such corporation or contractor shall be paid according to the provisions of this act, and such corporation shall become responsible and liable to the employés of such contractor in the same manner as if said employés were employed by such corporation.

Lawsuit for Recovery. SEC. 7. Whenever it shall become necessary for employés to enter or maintain a suit at law for the recovery or collection of wages due as provided by this act, then such judgment shall include a reasonable attorney fee, to be taxed as part of the costs in the case, and collected under the same provisions of law as such judgment.

RELATING TO PAYMENT OF WAGES.

AN ACT to secure to laborers in and about coal mines and manufactories the payment of their wages in lawful money of the United States.

[General Statutes 1889, ch. 31, p. 724.]

SECTION.

301. Laborers to be paid.
302. Coercion of employés.

SECTION.

303. County attorney to prosecute.

Laborers to be Paid. SECTION 301. It shall be unlawful for any person, firm, company or corporation to sell, give, deliver, or in any manner issue directly or indirectly to any person employed by him or it, in payment of wages due for labor, or as advances on the wages of labor not due, any scrip, token, check, draft, order, or other evidence of indebtedness payable to bearer or his assignee otherwise than at date of issue in lawful money of the United States. Any violation of the provisions of this section shall be punished by a fine of not less than \$25 nor more than \$100, or imprisonment of not more than 30 days, or both; and the amount of any scrip, token, check, draft, order, or other evidence of indebtedness sold, given, delivered, or in any manner issued in violation of the provisions of this section, shall be recovered in money at the suit of any holder thereof against the person, firm, company or corporation selling, giving, delivering, or in

any manner issuing the same: *Provided*, That nothing contained in this section shall apply to or affect the right of any person or private individual from giving orders on any store or business house or firm in the business or the business or profits of which he or it has no interest, directly or indirectly: *Provided further*, That such order shall only be given at the solicitation of the employé of such person or private individual: *Provided further*, That nothing contained in this section shall apply to contracts made and entered into between farmers and their employés, where mutual arrangements are made between them otherwise.

Coercion of Employés. SEC. 302. Whoever compels or in any manner seeks to compel or attempts to coerce an employé of any person, firm or corporation to purchase goods or supplies from any particular person, firm or corporation, shall be fined not more than \$100 nor less than \$20, or imprisoned not more than 60 days, or both.

County Attorney to Prosecute. SEC. 303. The county attorney of any county, upon complaint made to him, shall proceed to prosecute the violators of this act as prescribed in other cases of misdemeanor.

GLOSSARY OF TECHNICAL MINING TERMS.

The following is a glossary of the terms most frequently used by miners throughout the states:

After Damp.—The mixture of gases remaining in a mine after an explosion of fire damp, which may consist of carbonic acid gas, carbonic oxide, water vapor (quickly condensed), nitrogen, oxygen, and in some cases free hydrogen, but usually consists principally of carbonic-acid gas and nitrogen, and is therefore irrespirable.

Airpipe, or Air Box.—Square boxes made of wooden boards, in sections 8 to 16 feet long, for the conveyance of air into tunnels, etc.; also, iron pipes used for conveyance of compressed air.

Air Stack.—A ventilating chimney.

Air Way.—Any passage used for passage of air for ventilation.

Anemometer.—An instrument used for measuring the velocity of the ventilating current of air.

Arenaceous.—Sandy rocks are arenaceous when they contain a considerable percentage of sand.

Argillaceous.—Clayey. An argillaceous rock is one that contains a considerable percentage of clay, or has some of the characteristics of clay.

Band.—Interstratified rock in coal.

Brushing.—To cut down the roof of an entry or passageway in the mine, after the coal has been mined away, to make height for mules, etc.

Bank.—A word often used among miners in referring to the coal mine.

Battery.—Any structure built of timber or plank to keep the coal in the room, or prevent it from sliding down a chute when not wanted. This is used on pitching veins.

Bear; to Bear in.—Usually applied to underholing or undermining.

Bed.—A regular member of a stratified series deposited or formed after the underlying and before the overlying rock.

Bed Rock.—The solid rock underlying the soil, drift or alluvial deposit.

Bench.—A natural terrace marking the outcrop of any stratum; a division of a coal seam separated from the remainder by a parting of slate, shale, iron pyrites, sulphur, or other foreign matter.

Bit.—A drilling-chisel.

Black Damp, Choke Damp.—Carbonic acid gas = CO_2 ; thus distinguished from white damp or carbonic oxide = CO .

Blossom.—Outcrop of a coal bed or mineral deposit.

Blower.—A strong discharge of gas from a fissure.

Blow Out; to Blow Out.—A blast is said to blow out when it acts like a cannon, throwing out the tamping without bringing down the rock or coal.

Bone Coal; Bone.—Slaty or argillaceous coal, or carbonaceous shale, occurring in coal seams.

Bottom Lift.—The lowest or deepest lift.

Bottom.—The landing at the bottom of the shaft or slope; the lowest point of mining operations; the floor-bottom rock, or stratum, underlying a coal bed.

Brattice.—A board or plank lining or partition, in any mining passage, to confine

air and force it into the working places. Its object is to keep the intake air from finding its way by a short route into the return air way.

Brattice Cloth.—A heavy cloth or canvas, often covered with some waterproof material, for temporarily forcing air into the face of the room or entry; also used in place of doors at the entrance of rooms. They are then frequently called "sheets." Such brattice cloth should be unflammable in gaseous mines; this is not so, however, in many instances.

Bridle Chains.—Safety chains to support the cage if the middle link should break; when two chains are used in a slope (instead of attaching the rope by a single chain to the drawbar of a car), they are also called bridle chains.

Bucket.—The piston of a lifting pump; or a bucket used in sinking shafts.

Buntins.—Timbers placed horizontally across a shaft to carry the cage guides and column pipes, also to strengthen the shaft timbering.

Butty.—A partner or comrade working with another in the coal mine.

Cage.—A platform on which men and cars are raised to the surface from the mine.

Cap, Cap Piece.—A piece of plank put on the top of a prop next the roof.

Cap.—The pale bluish elongation of the flame of a safety lamp, caused by the presence of gas—fire damp.

Carbonaceous.—Coaly; containing carbon of coal.

Carboniferous.—Containing or carrying coal; thus, carboniferous rocks, the carboniferous formation.

Cave; to Cave in.—Falls from the roof or sides of the entries or rooms of a mine.

CH₄.—The chemical notation for carbureted hydrogen, or fire damp.

Chain Pillar.—A pillar left to protect the top of entry and air way, and running parallel between these passages.

Charge.—The amount of powder used in one blast or shot.

Chocks.—Shanties; a building built with logs or props crossing one another to support the roof, in a place where an extra creep of the stratum takes place.

Clanny Lamp.—Safety lamp invented by Doctor Clanny. This lamp differs from the Davy in having the lower portion of the covering made of glass, instead of being wholly gauze.

Clinometer.—A small pocket instrument, provided with a spirit level and graduated arc, for measuring the angle of a dip.

Coal Measures.—The carboniferous formations.

Cleavage.—The property of splitting more readily in some directions than others.

Collar.—The horizontal timber resting upon two upright or inclined legs or props, for the support of the roof in an entry or air way.

Colliery.—This term is used to denote not only the mine, but includes also all the structures that make up the plant of the surface: the mine and all its adjuncts.

Column Pipe.—Cast-iron or wrought-iron pipes through which the water is conveyed from the mine pumps to the surface.

Conglomerate.—The rock formation, consisting of pebbles and fragments of various rocks cemented together.

Creep.—A squeeze or crush, forcing the pillars down into the floor or up into the roof, which often gives the miner the impression that the floor is rising.

Crevise.—A fissure in rock or coal.

Crib Work.—A structure composed of horizontal frames of timber laid one upon another, built like a log cabin.

Cribbing.—Timbering a shaft with crib work; it commonly extends from the surface down to bed rock.

Crop.—To come to the surface, and crop out.

Crosscut or Cross Heading.—A passage driven for ventilation through the pillar between entry and air way.

Davy Lamp.—A safety lamp, invented by Sir Humphrey Davy, with a fine wire gauze inclosing the flame; 784 apertures to the square inch; framework, brass.

Dead Air.—The air of a mine is said to be dead or heavy when it contains carbonic-acid gas (black damp), or when the ventilation is sluggish.

Dead Work.—Work not in itself productive of enough coal to pay the cost of driving, or producing nothing at all.

Derrick.—The structure erected for drilling or hoisting process.

Dip.—The angle of inclination of the coal seams or mineral bed or vein, measured from a horizontal line.

Door.—Doors are placed in the passages of mines to prevent the ventilating current from taking a short cut to the upcast shaft.

Door Trapper.—A boy whose duty it is to open and close a mine door before and after the passage of a mine car.

Downcast.—The passage or air way through which the ventilating current passes into a mine.

Draw.—To draw the pillars; robbing out the pillars after the room is exhausted.

Drift.—A level tunnel driven in on the bed from the surface.

Driving.—Excavating horizontal passages.

Dump.—The tippie by which the cars are dumped on the slate or slack dump.

Entry.—A level used for a haulage road, from which rooms are turned.

Face, or Working Face.—The place at which work is being done in a room entry or air way.

Fault.—The place where the stratum is broken by some upheaval, and disappears from the continuous line.

Feeder.—A spring of water encountered in mining operations, or a small blower of gas.

Fire Board.—A board on which the fire boss indicates by chalk marks where gas is found in different parts of the mine.

Fire Boss.—A man whose duty it is to examine the workings of the mine for accumulations of explosive gas.

Fire Damp.— CH_4 , light carbureted hydrogen, an inflammable gas, explosive when mixed with air in certain proportions.

Floor.—The rock underlying the coal seam.

Free Coal.—Coal is said to be free when it is loose and easily mined.

Gang.—A set of miners; a shift.

Gas.—Fire damp.

Gob.—A space from which the coal has been mined, and refuse or waste left therein.

Gob Fire.—Fires originating spontaneously from the heat of decomposed gob.

Guide.—Vertical timbers fastened to the buntins to steady and guide the cage in a hoisting shaft.

Head Frame.—A structure erected over a shaft to carry the sheaves and steady the cage.

Head Gear.—That portion of the winding machinery attached to the head frame.

Heading.—A term usually given to an entry going to the rise of the vein or cross heading.

Hogback.—A short, anticlinal axis of limited extent.

Holding Through.—Driving a passage through to make connections with another part of the working, or with those of an adjacent mine.

Incline.—A slope; any inclined plane, whether above or beneath the surface.

Indicator.—An instrument or device for indicating the position of the cage in the shaft.

Intake.—A passage by which air enters the mine or downcast.

Keeps, or Keps.—Catches or rests to hold the cage when it is brought to rest at the top, or any intermediate landing (commonly called shuts or fans).

Lagging.—Small round timbers, slabs or planks driven in behind the legs and over the collars, to prevent pieces of roof from falling through.

Landing.—Any place where cars are taken off or put on a cage or slope.

Latches.—Synonym for switch, applied to split rails or hinge switches.

Leg.—Props on which the collar rests in entry or other timbering.

Level.—A horizontal passage in a mine.

Lift.—The number of entries from which coal is raised in a colliery. This term refers to the number of pump lifts also.

Long Wall.—A method of working coal where no pillars are left, and the roof is supported by pack walls, gob, etc. This method is often adopted where the coal vein does not exceed four feet.

Loose End.—A place mining alongside of a place previously worked out.

Manhole.—A small place cut back into the side of self-acting planes, slopes, or entries, for the safety of the miners during the passage of the mining cars.

Manway.—A small passageway used as a traveling way for the miner; also used as an air way for rooms on a pitching vein.

Measures.—Rocks or a series of rocks having some attribute in common; thus, coal measures, containing coal, etc.

Narrow Work.—Entries and air ways, crosscuts, and cross headings.

Needle.—An instrument or tool placed in a drill hole during the tamping of a charge, to leave on its withdrawal an opening through which the charge can be fired by a squib.

Outcrop.—That portion of a vein, bed, or any stratum appearing at the surface or occurring immediately beneath the soil or alluvial debris.

Outlet.—A passage furnishing an outlet for air (upcast, outtake) for miners, for water, etc.

Output.—The product of a mine sent to market.

Overcast.—A passage through which the ventilating current is conveyed over an entry or air way.

Pack Wall.—A wall or pillar built of gob to support the roof.

Parting.—A layer of slate or other matter dividing two benches of a coal seam.

Pillar and Room.—Pillar and stall, stoop and room, etc., a method of mining or working out coal.

Pillars.—A mass of coal left to support the roof.

Plane.—Usually applied to self-acting inclines, but any slope or incline on which coal is raised or lowered may be called a plane.

Plat or Plot.—A map of the surface and workings underground, or of either.

Post.—Any upright timber; applied to timbers used for propping.

Prop.—A timber set upright, or at right angles to the dip, to support the roof rock.

Regulator.—A frame with a sliding door, to regulate the air passing into any part of the workings.

Pendrock.—A variety of dynamite.

Rib.—To take out the pillars, or to reduce by skipping the side of the pillars left to support the roof.

Safety Cage.—A cage provided with an automatic safety catch.

Safety Lamp.—A lamp surrounded by a wire gauze, to prevent the direct contact of the flame with explosive gases.

Sand Pump.—A sludger; a cylinder provided with a stem (or other) valve lowered into a drill hole to remove the pulverized rock.

Scraper.—A tool used for cleaning out drill holes.

Sheave.—A wheel with a grooved circumference, over which a rope is turned, either for the transmission of power or for winding or hauling.

Sheets.—See "Brattice Cloth."

Siliceous.—Containing or having the characteristics of quartz.

Slack.—Small coal or dust from coal.

Slides.—See "Guides."

Slope.—An inclined passage driven in the bed or vein, opening up the surface.

Soapstone.—A term incorrectly applied to an unctuous rock.

Split.—Any division or branch of the ventilating current.

Sprag.—A short billet of wood or iron used to block the wheels of a mine car, in place of a brake.

Spring Latch.—A spring or automatic switch.

Stopping.—A brattice, or, more commonly, a masonry or brick wall built in a crosscut, to confine the air or direct to face of workings.

Stratum.—Any bed or layer; plural, strata.

Stump.—A small pillar of coal left between the entry and the rooms to protect these passages.

Sump.—An excavation in the coal or rock made below the level of the entry or shaft bottom to collect the mine water; the ditches or drains empty into it, and the pump draws it from thence.

Swamp.—A local depression in the coal bed in which the water collects.

Trapper.—A door tender in the mine; almost always a boy.

Trouble.—A dislocation or fault; any irregularity in a coal seam.

Upcast.—The opening or passage through which the air goes out of the mine.

Vein.—This term is often applied to stratified beds, but its use should be restricted to mineral deposits.

Water Gauge.—An instrument for measuring the ventilating pressure; the term is also used to denote the ventilating pressure in inches.

Whim.—A horse gin used for hoisting.

White Damp.—CO (carbonic oxide), a gas that may be present in the after damp of a fire-damp explosion, or in the gases given off by a mine fire; rarely met with in mines under other circumstances.

Winding.—Hoisting coal, etc.

COMPARISON OF COALS.

We give herewith tests made by the United States quartermaster general, at Washington, D. C., which shows how many pounds of coal are equal to one cord of standard oak wood. This we consider one of the best guides to a company or individual that pays fuel bills. By the aid of these equivalents, you can tell what is the best coal for your use for the least money.

	<i>Pounds.</i>		<i>Pounds.</i>
Weir, Kas., lump.....	1,988	Linton, Ind.....	2,698
Elk Mountain, Colo.....	2,028	Lexington, Mo.....	2,734
Trinidad, Colo.....	2,066	Spring Valley, Ill.....	2,751
Pittsburg, Kas.....	2,069	Piñon, Colo.....	2,794
Litchfield, Kas.....	2,069	Girard, Ill.....	2,840
Weir, Kas., mine run.....	2,165	Branch, Ill.....	2,852
Rouse, Colo.....	2,252	Hocking Valley, Ohio.....	2,971
Leavenworth, Kas.....	2,307	Lyford, Ind.....	3,015
Cañon City, Colo.....	2,323	Streator, Ill.....	3,076
White River, Wyo.....	2,323	Boulder Valley, Colo.....	3,176
Rich Hill, Mo.....	2,369	Burlingame, Kas ...	3,301
Pleasant Hill, Utah.....	2,407	Marshall, Colo.....	3,373
New Kentucky, Ill.....	2,477	Scranton, Kas.....	3,418
Gallup, N. M.....	2,489	Star, Colo.....	3,429
Snake River, Colo.....	2,558	Mitchell, Colo.....	3,645
Mount Olive, Ill.....	2,641	Osage City, Kas.....	3,710
Ladd, Ill., third vein.....	2,660	All Pennsylvania anthracite.....	1,700
Fort Scott, Kas.....	2,670	Los Cerrillos, N. M., anthracite ...	1,657

SEVENTH ANNUAL REPORT

OF THE

STATE INSPECTOR OF COAL MINES

TO THE

GOVERNOR OF THE STATE OF KANSAS,

FOR THE

YEAR ENDING DECEMBER 31, 1894.

TOPEKA, KANSAS.

1895.

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Press of
THE KANSAS STATE PRINTING COMPANY.

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CONTENTS.

	<i>Page.</i>
Report	5
Atchison county.....	9
Bourbon county	9
Brown county	10
Cherokee county.....	11
Chautauqua county.....	16
Cloud county.....	16
Crawford county.....	16
Coffey county	24
Elk county	24
Ellsworth county	25
Franklin county.....	25
Labette county.....	26
Leavenworth county.....	26
Lincoln county	29
Linn county.....	30
Lyon county.....	32
Osage county.....	32
Republic county.....	40
Russell county.....	41
Shawnee county.....	41
Summary of the coal-producing counties in Kansas.....	42
Fatal accidents.....	43
Non-fatal accidents.....	64
Inspection of steam boilers.....	69

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REPORT.

OFFICE OF STATE INSPECTOR OF COAL MINES,
PITTSBURG, KAS., December 31, 1894.

Hon. E. N. Morrill, Governor of Kansas:

Dear Sir—In compliance with the requirements of the general mining laws of the state of Kansas, I herewith submit the seventh annual report of the State Inspector of Coal Mines.

Statistics and description of 20 coal-producing counties are herein contained, which give the names and post-office address of all operators, the location of mines, the amount of coal produced by each mine, and the estimated value of same; also the number of days worked in 1894.

The coal mines in this state gave employment to 10,088 men and 252 boys, a total of 10,340 employes, who produced 3,611,214 tons (short) or 90,280,350 bushels, the estimated value of which was \$4,899,774.62. This is an increase of 18,232,082 bushels as compared with the production of 1893.

The number of accidents in and around the coal mines of this state for 1894 were 79; of this number, 26 were fatal, and 53 non-fatal. This would give a ratio of 138,893 tons or 3,472,325 bushels mined to each fatal accident (or death), and 68,136 tons or 1,703,400 bushels mined to every non-fatal accident.

The counties in which the fatal accidents occurred are as follows: Crawford 10, Cherokee 10, Osage 3, Bourbon 1, Franklin 1, Leavenworth 1; total 26. The causes of fatal accidents (or deaths) were: Falls of roof 10, fell down shafts 3, caught by railroad cars on switch near mine 3, explosions in mines supposed to have been caused by coal dust 2, powder explosion 2, going back on supposed missed shots 2, caught by cage 2, heart failure 1, opening keg of powder with steel file 1; total 26.

I can truthfully state that 75 per cent. of the non-fatal accidents are not reported to this office. I obtained the information of 75 per-cent. of non-fatal accidents from local newspapers. Nevertheless, section 30, chapter 117, Laws of 1883, reads:

“Whenever, by reason of an explosion or other accident in a coal

mine, or the machinery connected therewith, loss of life or serious personal injury shall occur, it shall be the duty of the person having charge of such coal mine to give notice thereof forthwith to the Inspector."

As the law provides no penalty, it is optional on the part of the person in charge of any coal mine where an accident occurs whether he reports to this office or not.

I will not attempt to make any recommendations at this time, as I deem it useless and a waste of time until the majority of our members elected to represent the common people and the various industrial classes fully realize the necessity of enacting laws that will place a safeguard around those whose lives are in peril, as our miners are, as soon as they descend into the solitary and dreary chambers of a mine.

In my report of 1893 I recommended the enactment of what I considered the most essential and requisite laws to govern coal mines in Kansas. My recommendations were opposed by the representatives of certain coal companies or corporations who knew no more about the dangers which surround a miner when employed than a Hottentot. However, by an untiring effort, we secured the passage of a law which is of more importance to the miners of Kansas than all the mining laws now upon the statute book, particularly to those who work in mines operated on the room-and-pillar system.

In the last two years I have had reason, on several occasions, to test the validity of our mining laws. I have satisfied myself that our mining laws in Kansas are not applicable in the direction which they were intended when analyzed, thus rendering them nugatory. All such useless laws should be obliterated from our statutes, as they are suspicious and misleading. House bill No. 335, by Mr. Bone, of Crawford, "An act to provide for the health and safety of persons employed in mines, and supplementary to and amendatory of chapter 66a, General Statutes of 1889," is of more importance to the coal miners of Kansas, particularly the miners of Cherokee and Crawford counties, than all the mining laws of our state. The provisions of this bill were intended to extend the strong arm of the law in a sanitary measure to those employed in lead, zinc, gypsum and salt mines; but those not friendly to labor arrogated to themselves the power to exclude all mines except coal mines from the provisions of house bill No. 335. We have salt mines in Kansas which are over 1,000 feet in depth, with no second opening or any means of an escape, in case of danger, to the main shaft. And we have had representatives of the people, elected to the last legislature of 1895, who had the audacity to stand up in representative

hall and claim that a second opening was not necessary, and also claim that the salt miners employed in those deep-shaft mines required no protection under the law, claiming that there was no danger in connection with salt mines in Kansas. The most horrific incident in connection with their unfounded theory was the advocacy of certain candidates, who were aspirants for the office of State Inspector of Mines; they, too, supported the lifeguards of corporations. I will leave the intelligent, unprejudiced man of to-day to judge the inconsistency of such lawmakers and office hunters, whose estimated value of a miner's health and life in his perilous avocation receives less consideration than the interest of a company engaged in the production of salt. The czar of Russia, in his tyrannizing power, will not permit the convicts who are transported to the Siberian salt mines to work therein unless there are two openings in connection with such mines. Yet in a free republic, and especially in sunny Kansas, our lawmakers deny our miners the privileges accorded by the most despotic ruler on earth. If those who are so arbitrarily opposed to granting our miners any legislation were compelled to earn their livelihood in a coal mine, I am led to believe that their misconception of a miner's life would, in a short time, become susceptible of truth. The true realization of an imaginary situation very often discloses the truthfulness of a doubt in the prejudiced mind, when undisputed facts stare such men in the face in the solitary chambers of the penitentiary mine at Lansing. We have seen men there in the degrading garb of a convict who were bitterly opposed to the free miners receiving any protection when they were free to exercise the duties of an American citizen, but who changed their opinions when they were compelled to accept the situation and perform the laborious task assigned to each irrespective of the unavoidable danger in connection with mines: men who were hostile to our free miners because they dare assert the truth and ask for nothing only justice in a sanitary measure. It is surprising to learn how convincing and sympathetic they become when convinced of their erroneousness, and they themselves are compelled to perform the unhappy, hazardous work of a miner. The Christian spirit of "treating others as we would like to be treated" does not seem practicable, and man's inhuman efforts to punish a fellow-man, so that he can derive a revenue from his labor at the least possible cost, seems to be the prevailing opinion that actuates us to become opposed to any laws which may benefit our craft either in health or safety in their daily avocations of life, providing we are of the opinion that such laws may have a tendency to impair our interest by incurring an additional cost in or around a mine.

Before this report appears in print, I will have severed my connection with this office, and my successor will be installed. I am of the opinion I did not give general satisfaction during my term of office, and I am fully convinced that it would be impossible to do so. What may be pleasing to one will be displeasing to the other. However, I performed the sworn duties of my office to the best of my limited ability, without fear or favor. I know I have incurred the displeasure of some mine operators, because I dared perform the duties imposed on me according to law. I am of the opinion that I may not have given general satisfaction among my mining brothers, and believe me, no one man can. As stated already in this report, the law is misleading, of which the average miner is not aware. The only assistance a mine inspector can render the miners, whose complaints are very often well founded, is to have backbone enough to enforce the mining laws. Irrespective of the practical or theoretical knowledge or qualifications a mine inspector may acquire, he is helpless in the performance of his duties unless the laws are so framed that he can be empowered to enforce the same regardless of consequences, according to his oath of office. Unless he has the stability to do so, the mine inspector is only a mere figurehead, whose usefulness should be dispensed with.

We have had no strikes in Kansas of any importance during the year 1894. The increased production of 18,232,082 bushels in 1894 as compared to the output of 1893 is due to the fact that our coal mines in Kansas were in operation when the Eastern miners were idle in May and June, contending for an adjustment of mining prices. It is a notable fact that in the increased production of 18 million bushels in Kansas for the year 1894, Cherokee and Crawford counties are credited with 16½ million bushels of the increased output. Crawford county alone produced over one-half of the entire output of coal mined in Kansas.

Governor, I want to recall to your memory the fact that in our coal-mining industry in Kansas, over 10,000 employes find employment, and whose production adds close to \$5,000,000 to the wealth of Kansas annually—more than the entire value of the wheat crop of our state—was not noticed in your inaugural address or your message to the legislature of 1895, and you willfully failed to make mention of the industry or the class of people who are employed therein. All other branches of industry received some comment in your message except the miners, who are not worthy of any consideration (seemingly) only when soliciting their suffrage before an election, although the mining industry is the second largest industry in Kansas.

STATISTICS AND DESCRIPTION OF COAL MINES, BY COUNTIES, FOR 1894.

ATCHISON COUNTY.

Coal production, 2,500 tons (short) or 62,500 bushels; estimated value, \$5,625.

The only extensive coal mine in Atchison county is the W. T. F. Donald drift mine, located $2\frac{1}{2}$ miles south of Atchison on a switch of the Missouri Pacific railway. The output of the mine for 1894 was 50,000 bushels. A few of the local coal dealers leased and mined about 12,500 bushels. An average of 40 men were employed. Of this number the Donald mine employed 36, 23 of which were miners and 13 day hands. Price paid for mining, \$1.50 per ton. System, long-wall; average thickness of coal, 15 inches. Ventilation by furnace or grate fire. Condition of mine, average. I have not been notified of any accident in connection with this mine during the year. This mine was converted into a machine mine January 1, 1895.

W. T. F. McDonald, Superintendent.

BOURBON COUNTY.

Coal production, 19,200 tons (short) or 480,000 bushels; estimated value, \$33,600.

All of the coal mined in Bourbon county is obtained from strip banks and small drift mines. None of these mines are in connection with the railroads. Most of the coal mined in this county is sold in Fort Scott for domestic purposes at an average price of 7 cents per bushel. There is no practical system carried out in developing the coal vein of this county by those who operate these small drifts. Practical miners generally lease from the landowners and pay the enormous royalty of 1 cent per bushel on all coal mined, when $\frac{1}{2}$ cent per bushel would be a very remunerative price to the landowner. Those who employ miners pay them $4\frac{1}{2}$ cents per bushel for all coal mined. Very little mining is done in this county in the spring or summer months; but many of the farmers strip coal in summer, and haul it to market at Fort Scott in winter.

The names and post-office addresses of the principal operators are as follows:

William Little, Fort Scott; Charles Hinten, Fort Scott; John Drake, Fort Scott; Lam Civey, Fort Scott; John Straitor, Fort Scott; M. Williams, Fort Scott; John Scott, Fort Scott; Frank Collins, Fort Scott; William Griffens, Fort Scott; S. E. Mitchell, Fort Scott; John Moorey, Fort Scott; Ben Bruce, Fort Scott; S. Smallwood, Fort Scott; O. Buchannen, Fort Scott; Ed. Bretts, Fort Scott; S. Osborne, Fort Scott; D. Garret, Fort Scott; W. Payne, Fort Scott; H. Wilkinson, Fort Scott; N. Chase, Fort Scott; J. McGuire, Fort Scott; W. Simmons, Godfrey; G. Baker, Godfrey; G. Spillet, Godfrey; T. Indecott, Godfrey.

Over one-half of the aforesaid operators mine on the Statton farm and T. King farm, about $2\frac{1}{2}$ miles east of Fort Scott, while others mine on the Gough place, $2\frac{1}{2}$ miles west of Fort Scott. About 80 per cent. of the coal mined in Bourbon county is mined within between 2 and $3\frac{1}{2}$ miles of Fort Scott. It is almost impossible to keep track of those who operate, as they are almost continually selling out, leasing new locations, trading their interest in the coal business for something else, etc. I have not been informed of any accidents during the year. Only one, George Bolinger, who was killed on January 23; 1894, by the caving in of his room in the William McKinney mine, one-half mile west of the Wichita shops, Fort Scott. A descriptive statement of this fatal accident has already been printed in my last report of 1893. Average number of miners and others employed, 182.

BROWN COUNTY.

Production, 2,000 tons or 50,000 bushels; estimated value, \$4,500.

The only coal mine in operation in Brown county that I know of is the Ideal mine, which will be named in future as the Castle Garden mine. It is a horse-power mine, located on Roy's creek, Irving township. It has been opened on the room-and-pillar system, but has been changed to long-wall system. Average thickness of coal, 16 inches; price paid for mining, 6 cents per bushel. This coal sells at 9 cents per bushel. Fourteen men were employed, eight of whom were miners and six day hands. W. H. Mullins, who has leased this mine, informed me that he would employ at least 15 miners in the autumn and winter months. This mine has two separate openings (shaft) and a slope, which is used as an intake and traveling way. Ventilation good. I have not been informed of any accidents. This mine has no railroad connection. White Cloud, Doniphan county, is the nearest railroad point and post office. A new coal shed has been built which will store about 1,000 tons of coal for fall and winter trade. W. H. Mullins is the present lessee. Address, White Cloud, Doniphan county.

CHEROKEE COUNTY.

Production, 1,036,614 tons or 25,915,350 bushels; estimated value, \$1,295,767.50.

Number of miners employed, 1,635; number of day hands employed, 530; number of boys employed, 105; number of strip-pit employes, 167; total, 2,437.

The principal shaft mines in this county worked an average of 140 days per mine in 1894. Number of kegs of powder used, 54,143; estimated value, \$108,286.

TABLE OF CHEROKEE COUNTY.

Office No.	NAMES OF OPERATORS AND POST-OFFICE ADDRESS.	No. of days worked in 1894.	No. bushels mined in 1894.	Estimated value.
1	Geo. Robinson, Columbus.	220	78,800	\$3,940 00
2	Columbus Coal Company, Columbus.	147	699,445	34,972 25
3	Scammon Coal Company, Columbus ¹			
4	Peter Graham, Scammon.	110	346,000	17,300 00
5	Central Coal and Coke Company, mine No. 4, Scammon, ...	106	567,075	28,353 75
6	Central Coal and Coke Company, mine No. 5, Weir.	98	984,050	49,202 50
7	Central Coal and Coke Company, mine No. 6, Weir.	156	2,871,880	143,594 00
8	Central Coal and Coke Company, mine No. 7, Scammon, ...	164	3,058,350	152,917 50
9	Central Coal and Coke Company, mine No. 8, Weir.	172	3,344,550	167,227 50
10	Durkee Coal Company, mine No. 1, Weir.	126	1,133,500	56,675 00
11	Durkee Coal Company, mine No. 2, Weir.	98	97,500	4,875 00
12	Durkee Coal Company, mine No. 3, Weir.	95	383,000	19,150 00
13	James Hall, Weir.	160	32,000	1,600 00
14	James Williams, Scammon.	150	45,000	2,250 00
15	Weir Bros, Weir.	108	808,167	40,408 35
16	Hamilton & Braidwood, mine No. 1, Weir.	130	1,256,837	62,841 05
17	Hamilton & Braidwood, mine No. 2, Weir.	95	325,781	16,289 05
18	Weir Coal Company, slope No. 5, Weir ²			
19	Weir Coal Company, slope No. 7, Weir ³			
20	Excelsior Coal Company, Weir.	97	227,850	11,392 50
21	Central Coal Company, Weir ⁴			
22	Kansas and Texas Coal Company, mine No. 18, Weir.	165	5,021,250	251,082 50
23	Kansas and Texas Coal Company, mine No. 23, Weir ⁵			
24	Kansas and Texas Coal Company, mine No. 47, Weir.	120	2,637,720	131,886 00
25	Davis Coal Company, Cherokee.	276	90,320	4,516 00
26	Southwestern Coal and Mining Company ⁶			
	Totals.	2,793	24,009,075	\$1,200,453 75
	Strip coal.		1,906,275	95,313 75
	Totals.		25,915,350	\$1,295,767 50

¹ Failed to make any returns to this office.² Suspended operation in 1894.³ Suspended operation in 1894.⁴ Suspended operation in 1894.⁵ Was not in operation in 1894.⁶ Commenced operation December, 1894.*Record of Inspection.*

No. 1. George Robinson's shaft mine still continues to be a horse-power mine, and is located $3\frac{1}{2}$ miles north of Columbus. This mine has no railroad connection. Employed an average of five miners, who worked 220 days during the year. Price paid for mining unscreened coal, 56 cents per ton. Condition of mine, average.

James Robinson, Mine Boss.

No. 2. The Columbus Coal Company's shaft mine is a steam

power, located at Steppville. This mine employed an average of 78 men and 6 boys, who worked 147 days during the year. This mine will never be properly ventilated as long as the system of single entry is continued. Chris. Newlands, Mine Boss.

No. 3. The Scammon Coal Company's shaft mine is a steam power, located three miles north of Columbus. On the occasion of my last visit to this mine I found the first east on north was not properly ventilated. Mr. John Judd, the mine boss, understands his duties, and seems anxious to keep the mine in good condition, particularly as to ventilation; but an individual named Clarence Atkinson is assuming the title of superintendent over this mine, who has very little respect for the mining laws of our state, and is absolutely ignorant of the first principles governing mines or mining. This man, Atkinson, has failed to make a report to this office for either 1893 or 1894 as to the amount of coal mined or the number of miners employed, which is his duty according to the mining laws of Kansas. Notwithstanding this, he is a redeemer and an advocate of law and order. His usefulness to the company may entitle him to a remunerative salary as superintendent in the secret manipulation of his unknown profession.

No. 4. The Enterprise shaft mine, which is owned and operated by Peter Graham, has been converted into a steam power. This mine is located $1\frac{1}{2}$ miles southwest of Scammon depot, and has no railroad connection. Coal is hauled in wagons to the Kansas City, Fort Scott & Gulf railroad, at Stilson. This mine employed an average of 39 men, who worked 110 days during the year. The price paid for mining was $78\frac{1}{2}$ cents per ton in summer and \$1 in winter for screened coal. This mine was in fair condition.

M. Pattinson, Boss.

No. 5. Central Coal and Coke Company's shaft mine No. 4, located one-fourth mile west of Scammon, was abandoned August 31, 1894.

No. 6. Central Coal and Coke Company's shaft mine No. 5 is a 90 horse-power steam plant, located one mile northwest of Weir City, on a switch of the Kansas City, Fort Scott & Memphis railroad. This mine only worked 89 days during the year. An average of 112 men and 5 boys were employed. No improvements have been made in or around the mine. This mine is in about the same condition as stated in my last report.

Archie Fulton, Mine Boss.

No. 7. Central Coal and Coke Company's shaft mine No. 6 is located $1\frac{1}{4}$ miles southwest of Weir City. This mine was considered about one of the best in the district, and is in pretty fair condition.

This mine worked 156 days during the year, and employed 200 men and 5 boys. The majority of the miners employed at this mine are negroes, who were imported by the company during the unpleasantness of 1893.

William Scott, Mine Boss.

No. 8. Central Coal and Coke Company's mine No. 7 is located about one mile north of Scammon. This mine worked 164 days during the year, and employed 181 men and 10 boys. A new pair of hoisting engines has been erected at this mine, whose capacity is equal to 140 horse-power. The general condition of this mine was about an average.

C. Elliot, Mine Boss.

No. 9. Central Coal and Coke Company's mine No. 8 is located $1\frac{1}{2}$ miles southwest of Weir City. This mine worked 172 days during the year, and employed 229 men and 6 boys. The majority of the miners at this mine are negroes, who came from Alabama and elsewhere during the suspension of 1893. The general condition of this mine is about an average. Much improvement could be made, especially in ventilation.

John Jenkins, Mine Boss.

No. 10. Durkee Coal Company's mine No. 1 is located one-fourth of a mile west of the Kansas City, Fort Scott & Memphis depot at Weir. This mine worked 126 days during the year, and employed 136 men and 12 boys. The general condition of this mine as to ventilation is not very commendable, and as long as the system of single entry is continued coal mines operated under the system can never be properly ventilated. As an improvement for cleaning the coal, a shaker screen has been put in.

William Humble, Mine Boss.

No. 11. Durkee Coal Company's slope mine No. 2 is located three-fourths of a mile northeast of the Weir City smelter. This slope mine changes hands so often that it is almost impossible to keep track of the real lessee or operator. The mine is in bad condition, as everyone who leases it for a certain period takes all the advantages possible and does not attempt to keep the mine in proper condition. An average of 23 men and 3 boys have been employed, who worked 98 days during the year. This slope mine has no railroad connections, the coal being hauled in wagons to a Frisco switch east of the smelters. Price paid for mining is 50 cents in summer months and 56 cents in winter.

Joe Humble, General Superintendent.

No. 12. The Durkee Coal Company's shaft mine No. 3 is a 40 horse-power steam plant, located one-half mile northwest of Scammon. This mine employed an average of 43 men, who only worked 95 days during the year. No improvements have been made during the year. Mr. Zimmerman, the mine boss, takes an interest in keep-

ing this mine in good condition, if only supplied with necessary material by the company. John Zimmerman, Mine Boss.

No. 13. James Hall's shaft mine is a horse-power, located two miles northeast of Scammon. Mr. Hall made no returns to this office of the amount of coal mined. An average of two miners worked about 160 days. Having no railroad connection, he cannot operate and compete with the surrounding mines.

James Hall, Superintendent.

No. 14. The Williamson shaft mine, which is a horse-power also, is located northeast of Scammon and directly south of the James Hall mine. Very little coal has been mined, as there is no railroad connection, and it does not pay to haul coal in wagons to the railroad switch, consequently such shafts have to depend almost entirely on local trade.

No. 15. Weir Bros.' shaft mine is a steam-power, located directly west of Weir City. This mine employed 96 men and 5 boys, who worked 108 days during the year. In the way of improvements, a 14-foot fan has been put in, which will materially improve the condition of the mine if the air-courses are properly looked after by those in charge. Parts of this mine have been in a horrible condition for want of air, and the fault is due to the negligence or carelessness of the mine boss. It is to be regretted that such men are placed in charge where the poor miners have to suffer for want of air through their (the boss's) ignorance or inattentiveness.

L. Myers, Mine Boss.

No. 16. Hamilton & Braidwood's shaft mine No. 1 is located about one-half mile northwest of Weir. This mine employed 130 men, who worked 130 days during the year. No improvements have been made during the year.

James Hamilton, Boss.

No. 17. Hamilton & Braidwood's shaft mine No. 2 is located on northwest quarter, section 28, township 31, range 24, Cherokee county. This mine employed 42 men, who worked only 95 days during the year. Price paid for mining, 50 cents in summer months and 56 cents in winter. This mine was in very fair condition.

Andrew Braidwood, Boss.

No. 18. Bennett's slope mine No. 5, located southwest of Weir, was not in operation on account of litigation.

No. 19. Bennett's slope mine No. 7, located southeast of Weir, was not in operation on account of litigation.

No. 20. The Excelsior Coal and Mining Company's mine No. 1 is a horse-power, located one mile south of Weir. This mine worked 97 days during the year, and employed 23 men and 1 boy.

Price paid for mining, 50 cents in summer and 56 cents in winter for unscreened coal. This mine is operated on the co-operative plan. Condition of mine, average.

Watkin Beddow, Mine Boss.

No. 21. The Central Coal Company's shaft mine, known as the "Daisy," has not been in operation on account of litigation. This mine is owned at present by W. H. Barrett, who will operate it in the future. Mr. Barrett is the lessee of Kansas and Texas mines Nos. 18 and 47.

No. 22. The Kansas and Texas Coal Company's shaft mine No. 18 is located $1\frac{1}{2}$ miles north of Weir, and is leased and operated by W. H. Barrett. This mine worked 165 days during the year, and employed 292 men and 25 boys. Price paid for mining is 50 cents per ton in summer and 56 cents in winter for unscreened coal. The output of this mine for the year was 5,021,250 bushels, being the largest output of any mine in the state, except No. 1, Frontenac. The average daily output of No. 18 is about 1,217 tons. As an improvement, the tippie has been remodeled and shaker screens put in; also a new boiler. An additional air-shaft has been sunk, and double tracks laid in main entries. The air still continues to be very dull in many parts of the mine, owing to the extensiveness of the workings, which are principally operated on single-entry system.

P. Welsh, Mine Boss.

No. 23. Kansas and Texas shaft mine No. 23, located about two miles north of Weir, has not been in operation.

No. 24. Kansas and Texas shaft mine No. 47, located about two miles northwest of Weir, is leased and operated by W. H. Barrett. This mine employed 159 men and 20 boys, who worked 120 days during the year, and produced 2,637,720 bushels of coal. The tippie at this mine has been remodeled also, and shaker screens put in. Price paid for unscreened coal is 50 cents per ton in summer and 56 cents in winter.

Edward Kelly, Mine Boss.

No. 25. Davis Coal Company's shaft mine is a horse-power, located one mile south of the Cherokee depot. This mine worked 276 days, and employed 16 men. The price paid for mining is 80 cents per ton in summer and 90 cents in winter for unscreened coal. Condition of mine, average.

R. Davis, Mine Boss.

No. 26. The Southwestern Coal and Mining Company's shaft mine is a steam-power, located $4\frac{1}{2}$ miles due west of Scammon, on a switch of the Missouri, Kansas & Texas railroad, at a point named Mineral City. This is a new shaft, which commenced operation in December, 1894. Depth of shaft, 122 feet; two openings; ventilation by fan 15 feet in diameter. Average thickness of coal, 3 feet 6

inches; system, double-entry. When I visited this mine everything in connection with the shaft and surroundings appeared in first-class condition.

Ira Fleming, Superintendent.

CHAUTAUQUA COUNTY.

Production, 1,520 tons or 38,000 bushels; estimated value, \$3,800.

Those who operate mines in Chautauqua county are Messrs. Fields, Elliott, and Jones. Very little, if any, coal is mined except in winter months. The mines are located southeast of Grenola. Only 16 miners and 4 boys, who acted as pushers, were employed during the winter months. Price paid for mining, 7 cents per bushel; selling price of coal at mine, 10 cents per bushel. Has only local trade. Average thickness of vein, 16 inches. I have not been informed of any accidents in or around these slope mines. Post-office address of mine operators: Leeds, Chautauqua county.

CLOUD COUNTY.

Production, 3,700 tons or 92,500 bushels; estimated value, \$9,250.

There were four shaft mines in operation in this county, as stated in my report of 1893, viz., Henderson's mines Nos. 1 and 2, the Gilbert mine, and Neitzel mine. The William Neitzel mine has been abandoned. During the summer of 1894 four new shafts have been sunk, as follows: The Vermetta & Neitzel shaft, 100 feet deep, size 4x10; the Henderson Bro.'s shaft, 76 feet deep, size 4x10; the James Murrey shaft, 35 feet deep, size 4x15; the Williams's shaft, 96 feet deep, size 4x10. All of the shaft mines in this county are located near Minersville. An average of 75 men were employed, 57 of whom were miners. Price paid for mining, 6 2-5 cents per bushel or \$1.60 per ton. Those who lease pay 1 cent per bushel royalty. Coal sells at mines for \$3 per ton in winter and \$2.50 in summer. The condition of the mines in this county is not very commendable, although great improvements have been made since I first visited, especially in those shaft mines which were in operation in 1893. Post-office address of operators: Minersville.

CRAWFORD COUNTY.

Production, 1,809,836 tons or 45,245,900 bushels; estimated value, \$2,262,295.

Number of miners employed, 2,798; number of day hands em-

employed, 620; number of boys employed, 134; number of strip-pit employes, 298; total, 3,850.

The principal shaft mines in this county worked an average of 137 days per mine in 1894. Number of kegs of powder used, 100,516; estimated value of powder, \$201,032.

TABLE OF CRAWFORD COUNTY.

Office No.	NAMES OF OPERATORS AND POST-OFFICE ADDRESS.	No. of days worked in 1894.	No. bushels mined in 1894.	Estimated value.
1	Arthur Bell, Coalvale.....	200	108,000	\$5,400 00
2	Franklin Coal Company, mine No. 1, Coalvale ¹			
3	Davis Bros., Coalvale.....	120	86,400	4,320 00
4	Hamilton & Ward, Coalvale.....	38	12,160	608 00
5	Kansas Shaft Coal Company, Midway.....	180	1,280,550	64,027 50
6	Western Coal and Mining Company, mine No. 2, Fleming.....	141	1,435,929	71,796 45
7	Western Coal and Mining Company, mine No. 3, Fleming.....	136½	1,434,517	71,725 85
8	Western Coal and Mining Company, mine No. 4, Yale.....	141¾	1,536,047	76,802 35
9	Western Coal and Mining Company, mine No. 5, Yale.....	126½	1,208,988	60,449 40
10	Western Coal and Mining Company, mine No. 6, Yale.....	63¾	228,941	11,447 05
11	Cherokee and Pittsburg Coal and Mining Company; mine No. 1, Frontenac.....	220	8,112,756	405,637 80
12	Cherokee and Pittsburg Coal and Mining Company, mine No. 2, Frontenac.....	83	1,175,317	58,765 85
13	Cherokee and Pittsburg Coal and Mining Company, mine No. 4, Frontenac.....	232	4,797,301½	239,865 05
14	Cherokee and Pittsburg Coal and Mining Company, drift mine, Frontenac.....	22	29,360	1,468 00
15	Pittsburg Gas Coal Company, Pittsburg ²			
16	Pittsburg and Midway Coal Company, mine No. 4, Midway.....	170	2,811,607	140,580 35
17	Pittsburg and Midway Coal Company, mine No. 5, Midway.....	19	62,450	3,122 50
18	Wear Coal Company, mine No. 2, Pittsburg.....	150	1,957,320	97,866 00
19	Wear Coal Company, mine No. 5, Pittsburg.....	170	1,163,425	58,171 25
20	Utley & Donald mine, Pittsburg ³			
21	Kansas and Texas, mine No. 20, Pittsburg.....	204	2,589,950	129,497 50
22	Kansas and Texas, mine No. 22, Pittsburg.....	112	1,160,850	58,042 50
23	Kansas and Texas, mine No. 28, Pittsburg ⁴			
24	Kansas and Texas, mine No. 37, Pittsburg.....	198	3,215,975	160,798 75
25	Arnott & Lanyon, Pittsburg.....	119	827,722	41,386 10
26	Hamilton & Grant, Weir City.....	190	383,000	19,650 00
27	Doorey & Walker, Pittsburg.....	85	15,300	765 00
28	Root mine, Pittsburg ⁵			
29	Hooper mine, Pittsburg ⁶			
30	S. Carwright mine, Pittsburg ⁷			
31	Durkee Coal Company, mine No. 4, Weir City.....	156½	1,297,500	64,875 00
32	Fuller Coal Company, Pittsburg.....	145	760,775	38,038 75
33	Independent mine, Pittsburg.....	90	28,800	1,440 00
34	Central Coal and Coke Company, mine No. 9, Weir City.....	205	886,525	44,326 25
35	J. C. Santifer mine, Weir City ⁸			
36	Sheldon Coal Company, Pittsburg.....	128	118,400	5,920 00
37	Black Diamond Coal Company, Pittsburg.....	155	99,200	4,960 00
38	G. Watkins drift mine, Pittsburg ⁹			
39	Robert Nash mine, Pittsburg ¹⁰			
40	T. M. Barrett, Pittsburg.....	75	18,000	900 00
41	Excelsior Coal Company, Pittsburg.....	92	58,440	2,921 90
42	Ratliff & Hooper, Pittsburg.....	30	36,000	1,800 00
43	Geo. Anderson, drift, Pittsburg.....	150	45,000	2,250 00
44	John Denehy, drift, Pittsburg.....	50	15,000	750 00
45	Stotts & Dales, drift, Pittsburg.....	20	9,600	480 00
46	Schreck & Hindle, drift.....	20	4,800	240 00
	Totals.....	4,437½	39,021,905	\$1,951,095 25
	Strip coal.....		6,223,995	311,199 75
	Totals.....		45,245,900	\$2,262,295 00

¹ In litigation in 1894.² In litigation.³ Abandoned.⁴ Abandoned.⁵ Suspended operation January, 1894.⁶ Suspended operation January, 1894.⁷ Suspended operation January, 1894.⁸ Abandoned.⁹ Abandoned.¹⁰ Abandoned.

Record of Inspection.

No. 1. The Arthur Bell drift mine is located northeast of Coalville, on the Fort Scott & Memphis railroad. There are two openings in connection with this mine; natural ventilation. Employed an average of 18 men, who worked about 200 days. Price paid for mining, 50 cents per ton in summer and 60 cents in winter. Condition of mine, average. J. W. Hartman, Mine Boss.

No. 2. Franklin Coal Company's shaft mine No. 1 was not operated in 1894. Cause, litigation.

No. 3. Franklin Coal Company's mine No. 2 is leased and operated by the Davis Bros. This mine is located about 400 yards southeast of Coalvale depot. About nine miners and four day hands were employed, who worked 120 days. The condition of the mine was not very commendable on the occasion of my last visit.

J. Davis, Mine Boss.

No. 4. The Hamilton & Ward shaft mine is a horse-power, located directly northeast of Coalvale depot. This is a new opening. Coal is hauled to railroad switch in wagons. They worked 38 days, and employed an average of four miners.

— Hamilton, Mine Boss.

No. 5. The Kansas Shaft Coal Company's shaft mine is a steam power, located one-half mile east of Cornell and $1\frac{1}{4}$ miles south of Yale, on a switch of the Missouri Pacific railway. This mine employed an average of 92 men and 12 boys. Price paid for mining was 56 cents per ton in summer and 60 cents in winter for un-screened coal. Numerous complaints have been made to this office on account of insufficient ventilation, all of which were well-founded. On the occasion of my last visit to this mine it was in a deplorable condition, but since that time improvements have been made, particularly in ventilation. The head house has been rebuilt, and switches relaid to grade.

John Slavin, Mine Boss.

No. 6. The Western Coal and Mining Company's shaft mine No. 2 is located at the Fleming depot, on the Missouri Pacific railway. This mine employed an average of 130 men, who worked 141 days during the year. In my last report, I fully described the entire condition of this mine, which was everything but satisfactory, on account of bad air, etc. As day hands have been reduced in number, I might say that the mine has been left to take care of itself as far as water bailing, timbering and ventilation are concerned. I might state that the condition of the mine has not been improved very much, except an overcast has been constructed which may materially improve ventilation.

James Gardner, Mine Boss.

No. 7. The Western Coal and Mining Company's shaft mine No. 3 is a steam-power, located one mile northeast of the Fleming railroad depot, on a switch of the Missouri Pacific railway. An average of 122 men were employed in and around the mine, who worked 136 days. I visited the mine on different occasions, and always learned that little, if any, attention was given to ventilation by those in charge; timbering in entries was neglected also, and air-courses are sadly neglected, notwithstanding that two mine bosses and two superintendents are employed and paid monthly salaries who are supposed to attend to the supervision and care of these two mines at Fleming, viz., Nos. 2 and 3. In the way of improvement, an over-cast has been constructed that may increase the volume of air. The mine boss at this mine devotes most of his time watching mule-drivers and counting their trips, instead of attending to ventilation. When spoken to, he said that was his instruction from his superior mine boss, Mr. Gardner. Between them, the mine is not in a praiseworthy condition.

William Utley, Mine Boss.

No. 8. The Western Coal and Mining Company's shaft mine No. 4, Yale, is a steam-power also, located three-fourths of a mile northeast of Yale, Kas., on the Missouri Pacific railway. This mine worked 141 days, and employed 169 men. Price paid for mining is 52½ cents per ton for summer, and 60 cents in winter, for unscreened coal. The colored miners who were brought from Alabama during the unpleasantness of 1893 have control at this mining camp, and make it very interesting sometimes, both in and out of the mine. Mine in average condition.

Thomas McClusky, Mine Boss.

No. 9. Western Coal and Mining Company's shaft mine No. 5 is located one-fourth mile south of Yale, on a switch of Fort Scott Central railroad. This mine employed 125 men, who worked an average of 126 days. Most of the coal continues to be mined by mining machines. Great improvements have been made, particularly in ventilation, since the celebrated Mr. Kneedler, the boss of 1893, received his ticket-of-leave.

William Ginnes, Mine Boss.

No. 10. The Western Coal and Mining Company's shaft mine No. 6 is a steam-shaft, located one mile north of Yale, on the Fort Scott Central railroad. This mine employed 31 men and boys, and only worked 63 days during the year. Price paid miners, 52½ cents and 60 cents per ton for unscreened coal. This mine has suspended operation on account of the depression of the coal market.

H. Welch, Mine Boss.

No. 11. The Cherokee and Pittsburg Coal and Mining Company's shaft mine No. 1 is located one-half mile southeast of Frontenac de-

pot, on the Atchison, Topeka & Santa Fe railroad. During the year this mine worked 220 days, and employed an average of 565 men and 13 boys, who produced 8,112,756 bushels of coal—more than one-fifth of the entire mine product of Crawford county. Price paid for mining, \$1 per ton for screened coal. In some of the rooms in this mine the air was very dull. This being a very extensive mine, I consider the fan now in use incapable of supplying the requisite amount of air when running at ordinary speed. The most dangerous feature in connection with this mine is the accumulation of coaldust, which I consider a dangerous factor, particularly when shots are being fired; and under the present system of sprinkling by a water-box I believe the most dangerous parts of the mine are often overlooked. We hope that no emergency may arise from the coaldust element, but my prediction is that the unexpected may happen unless the accumulation of coaldust in mines receives more attention. As a whole, this mine was in a fair condition.

Peter McCall and R. Turner, Mine Bosses.

No. 12. Cherokee and Pittsburg Coal and Mining Company's shaft mine No. 2, Frontenac, is located three-fourths of a mile northeast of Frontenac depot. This mine employed an average of 213 men and 10 boys, who worked 83 days during the year. Price paid for mining, 56 cents per ton for unscreened coal. This mine was in fair condition as far as ventilation is concerned. I consider the accumulation of coaldust in this mine also very dangerous, particularly when firing shots; and unless strict attention is given, so as to either remove the coaldust or keep rooms and entries properly sprinkled, my predictions are that the unexpected may happen. I hope my opinion may prove groundless. This mine suspended operation on February 3, and did not resume operation until October 1.

William Nile, Mine Boss.

No. 13. Cherokee and Pittsburg Coal and Mining Company's shaft mine No. 4, Chicopee, is located four miles southwest of Pittsburg. This mine worked 232 days during the year, and employed an average of 251 men and 10 boys. Price paid for mining, \$1 per ton for screened coal. Good roads, and vetilation fair.

Martin Purtle, Mine Boss.

No. 14. Cherokee and Pittsburg Coal and Mining Company's drift mine is located two miles southeast of Pittsburg. This mine has no railroad connection. Coal is hauled in wagons to the railroad switch at Chicopee. This mine employed about 32 men. Condition of mine, fair.

D. McCann, Mine Boss.

No. 15. Pittsburg Gas Coal Company's mine is located two miles

northwest of Pittsburg. Only worked a few days in January, 1894. Has been idle on account of litigation.

No. 16. Pittsburg and Midway Coal Company's shaft mine No. 4 is located one-half mile northeast of Midway. This mine worked 170 days during the year. Price paid for mining, 56 cents per ton for unscreened coal. The mine is in fair condition.

T. Jones, Mine Boss.

No. 17. Pittsburg and Midway Coal Company's shaft mine No. 5 is located about three-fourths of a mile east of Midway, on a switch of the Fort Scott & Memphis railroad. This is a new mine, and commenced operation about the latter part of November. A pair of Hamilton self-dumping cages were put in at this mine, and give good satisfaction.

T. Jones, Mine Boss.

No. 18. The Wear Coal Company's shaft mine No. 2 is located $3\frac{1}{2}$ miles southwest of Pittsburg. The mining camp is generally called "Kirkwood." This mine only worked 150 days during the year, and employed an average of 160 men. Price paid for mining, $87\frac{1}{2}$ cents per ton in summer months and \$1 in winter months for lump coal. On the night of August 3, the tibble and fan-house burned down, also burning the cribbing of the main shaft and air-shaft. A new tibble, also a reversible fan-house, were immediately erected. A pair of Hamilton self-dumping cages were put in also, which give good satisfaction. Many complaints have been made by the miners employed in this mine on account of insufficient ventilation, and the complaints were well founded.

John Kirkwood, Mine Boss.

No. 19. Wear Coal Company's shaft mine No. 5 is located $1\frac{1}{2}$ miles northeast of Pittsburg. This mine worked 170 days, and employed 111 men. Price paid for mining, $52\frac{1}{2}$ cents per ton in summer and 60 cents in winter for unscreened coal. The general condition of this mine has not been much improved during the year.

William Kirkwood, Mine Boss.

No. 20. The Utley & Donald drift mine, on the Chaplin addition to Pittsburg, has been abandoned.

No. 21. The Kansas and Texas shaft mine No. 20 is located $1\frac{1}{2}$ miles west of Pittsburg. This mine worked 204 days during the year, and employed 174 men. I visited this mine many times, and I must truthfully state that the condition of the mine as a whole, as far as ventilation is concerned, was not very satisfactory. Although several promises were made, the object seems to be to get as much coal as possible, and let the mine take care of itself. The air-courses are caved in, which makes it impossible to ventilate a mine under

such circumstances. However, improvements have been made in ventilation by the force of persuasion. P. Simeon, Mine Boss.

No. 22. Kansas and Texas Coal Company's shaft mine No. 22 is located one mile north of Litchfield. It employed 143 men, and worked 112 days. This mine has been abandoned.

No. 23. Kansas and Texas Coal Company's shaft No. 28 has also been abandoned.

No. 24. Kansas and Texas Coal Company's shaft mine No. 37 is located one mile northwest of Litchfield. This mine employed about 204 men, and worked 198 days. The Alabama darkies were rendezvoused at this particular mine during the suspension of 1893, and they still continue to hold the fort with the expectation of saving money enough before they die to pay their way back again to the sunny South. At my last visit to this mine many parts of it were poorly ventilated. Vincent Gladys, Mine Boss.

No. 25. Arnott & Lanyon's shaft mine, located one mile south of Frontenac, employed 93 men who worked 119 days. Price paid for mining, 87½ cents per ton for lump coal in summer and \$1 per ton in winter. Ventilation in this mine was not very good on account of doors and curtains not being kept in order. D. Arnott, Mine Boss.

No. 26. The Hamilton & Grant shaft mine is located 2½ miles north of Weir City. This mine employed 34 men, who worked 190 days. Price paid for mining, 50 cents in summer and 56 cents per ton in winter for unscreened coal. This mine is in fair condition. William Hamilton, jr, Mine Boss.

No. 27. The Doorey & Walker shaft mine is a horse-power mine, located north of Pittsburg. This mine has no railroad connection, and sells principally to local trade. The mine is in good condition. — Walker, Mine Boss.

No. 28. The Root mine is a horse-power mine, located southwest of Pittsburg. This mine has been in operation only a few days in 1894.

No. 29. The Hooper mine suspended operation in January, 1894.

No. 30. The Cartwright mine suspended operation in January, 1894.

No. 31. Durkee Coal Company's mine No. 4 is located on the Schwab place, near the Weir City junction, on a switch of the Fort Scott & Memphis railroad. This mine worked 156 days, and employed an average of 109 men and 4 boys, the majority of which are Alabama darkies. This mine is like the majority of the mines

that are operated on the single-entry system, deficient as to ventilation.

George Makie, Mine Boss.

No. 32. The Fuller Coal Company's shaft mine is located $2\frac{1}{2}$ miles southwest of Mulberry. This mine employed 82 men, who worked 145 days. Price paid for mining, $52\frac{1}{2}$ cents per ton in summer and 60 cents per ton in winter for unscreened coal. Mr. Elliot, the mine boss, takes great pride in keeping the mine in first-class condition. This mine was in the best condition of any mine in the state, particularly as to ventilation.

G. M. Elliot, Mine Boss.

No. 33. The Independent shaft mine, formerly known as the Little Four Coal Company's mine, is located southeast of Pittsburg. This mine was leased by Mr. George Brown and others, who worked only about 90 days. The mine has no railroad connection, but is in fair condition.

G. Brown, Mine Boss.

No. 34. The Central Coal and Coke Company's shaft mine No. 9 is located northeast of Pittsburg. This mine employed 56 men and 2 boys, who worked 205 days during the year. On the occasion of my last visit to this mine I found it in good condition.

T. B. Scaife, Mine Boss.

No. 35. The J. C. Santifer shaft mine, located two miles northeast of Pittsburg on the Bevin farm, has been abandoned.

No. 36. The Sheldon Coal and Mining Company's shaft mine is a horse-power, located $1\frac{3}{4}$ miles north of Pittsburg. This mine worked 128 days, and employed 25 men. The mine is in good condition.

G. Graham, Mine Boss.

No. 37. The Black Diamond Coal Company's shaft mine is a horse-power, located southwest of Pittsburg, on a switch of the Missouri Pacific railway. There are three openings to this mine—main shaft, air-shaft, and an escapement-shaft—by which miners travel into and out of mine. Price paid for mining, 20 cents per mine car. This company does not pay for turning rooms, and only 75 cents per foot for cutting horseback. The condition of the mine was not praiseworthy. It is impossible to keep track of the mine boss, as they change so often.

No. 38. The George Watkins's slope mine, south of Pittsburg, has been abandoned.

No. 39. The Robert Nash shaft mine, southwest of Pittsburg, is also abandoned.

No. 40. T. M. Barrett's shaft mine is located at the Frisco crossing, about four miles southwest of Pittsburg. Barrett & Sons are the only employes employed, and only work at intervals, when the

railroad and coal companies take a notion to let them have a few railroad cars.

T. M. Barrett, Mine Boss.

No. 41. The Excelsior Coal Company's shaft mine is a steam-power, located one-half mile north of Pittsburg. This mine commenced operation in August, 1894. Depth of shaft, 50 feet; size, 7x16; average thickness of coal, three feet, four inches. There is no escapement in connection with the mine yet. An air-shaft will be sunk in the near future.

Charles Berkey, Mine Boss.

No. 42. The Radliff & Hooper shaft mine is a horse-power, located three miles northeast of Weir City. Depth of shaft, 36 feet; size, 6x12. This is a new mine, commenced operation December, 1894. This mine was in good condition when I visited it.

Robert Radliff, Mine Boss

No. 43. The Anderson drift mine is located north of the Wear Coal Company's mine No. 2, Kirkwood. Has no railroad connection. Coal is hauled in wagons to the railroad switch. The mine in good condition. The operator, George Anderson, is now numbered among the dead.

No. 44. The John Denchy drift mine is located one mile south of the Fuller shaft, on the Hughes's place. The vein is of a good quality. The only obstacle in the way of operating successfully is the hauling of the coal to the railroad switch at Fuller.

John Denchy, Mine Boss.

No. 45 and No. 46. The Stott & Dale drift and the Schreck & Hindle drift are located northeast of Pittsburg. These two drifts commenced operation in December, 1894. Have no railroad connection; supply only local trade. Closed down as soon as the cold spell passed over.

COFFEY COUNTY.

Production, 3,500 tons or 87,500 bushels; estimated value, \$7,875.

There are no shafts, slopes or drifts in this county that I know of, except one small drift located near Lebo, and operated by R. J. Soper. The balance of the coal produced in this county is stripped at an average depth of 11 feet from the surface. An average of 75 men were employed.

ELK COUNTY.

Production, 800 tons or 20,000 bushels; estimated value, \$2,000.

The Field & Swaffer slope mine is the only coal mine in this county to my knowledge, and is located about 13 miles southeast of

Grenola. Does only a local trade. The coal vein is about 16 inches in thickness. Price paid for mining, 7 cents per bushel. Five miners and two day hands were employed during the autumn and winter months. The coal sells readily at the mine for 10 cents per bushel. Operator, W. A. Swaffer, Leeds, Chautauqua county.

ELLSWORTH COUNTY.

Production, 2,010 tons or 50,250 bushels; estimated value, \$6,532.50.

There are five small drifts in this county, operated in winter months only. C. W. Kelly's drift mine is located $3\frac{1}{2}$ miles south of Wilson. W. S. Waterbury's drift is located three miles south and one-half mile west of Wilson. The others are the Hoover drift, the McCoy drift, and the Hurd drift. The three last-named drifts were opened in October, 1894; they are located southwest of Wilson. The coal averages about 12 inches in thickness. Miners are paid 8 cents per bushel for mining. Coal sells at 13 cents per bushel at the mine. About 28 men were employed in the winter months. The coal is an inferior quality of lignite, but nevertheless it finds a ready market among the farmers of this district.

FRANKLIN COUNTY.

Production, 16,021 tons or 400,525 bushels; estimated value, \$32,042.

When making my visits of inspection in this county I found many of the small drifts that were in operation in 1893 abandoned. The principal mines in this county are the Ransom and the Dyer mines. All the rest are operated on what might be termed the sliding scale. If the winter months are cold and there is good demand for coal, these little drifts are leased and operated under the most economical system which can possibly be practiced in the operation of a coal mine.

The J. H. Ransom shaft mine, located near Ransomville depot, on the Atchison, Topeka & Santa Fe railroad, employed 25 men and 2 boys, who worked 200 days during the year. Price paid for mining is 5 cents per bushel. J. H. Ransom, Boss.

The Caple drift mine only employed a few men, who mined in winter. This mine has no railroad connection.

The only coal mine in Franklin county having railroad connection is the Ransom mine.

The D. E. Price drift mine has been abandoned.

The Allen drift mine, south of Williamsburg, is abandoned.

The Lindsay drift mine, five miles north of Williamsburg, was in operation about three months during the winter. Mr. William Ward leased this mine for a term of five years, and pays 1 cent per bushel royalty.

The Benjamin Alexandria drift mine was not in operation when I visited that section of the county.

The F. E. Dyer drift mine is located three miles south and one-half mile west of Pomona. It employed 17 men, who worked 110 days during the year. Price paid for mining is 5 cents per bushel. This mine was in good condition at my last visit.

The Grabendike mine, which was leased by B. F. Reridon, was not in operation when I visited it.

The Bagsly drift mine, five miles northeast of Williamsburg, employed eight men, who worked about three months during the winter. Sells to local trade.

The Rusbatch mine was not in operation when I visited it.

The Moore Bro.'s drift mine worked about 90 days, and employed five men. Has only a local trade.

About 140 men altogether were employed, including strip-bank employes. The output of drift mines and strip banks is included in the total production.

LABETTE COUNTY.

Production, 3,400 tons or 85,000 bushels; estimated value, \$7,650.

The output of coal in this county is principally obtained from strip banks. L. Baker is the only extensive operator in the county. In December, 1893, a Mr. McKinstry, who was then prospecting in this county, informed this office of a rich discovery of 4½ feet of cannel coal found at a depth of 98 feet from the surface. Were this true Labette county would be redeemed, and confidence would be restored; but the people of that district are anxiously awaiting the wave of prosperity which was to immediately follow the greatest bonanza or find ever discovered in Kansas.

LEAVENWORTH COUNTY.

Production, 337,644 tons or 8,441,100 bushels; estimated value, \$548,671.50. Number of men employed, 1,312. Of this number, 389 were employed at the state mine or penitentiary shaft.

No. 1. The Leavenworth Coal Company's shaft mine, located at the north end of Second street, Leavenworth, employed 352 men and

36 boys, who worked 190 days during the year and produced 2,350,-180 bushels of coal. The extensiveness of this mine makes it rather difficult to ventilate the various sections where miners are employed. Nevertheless, the mine was in a fair condition. The west side of the mine is set apart for the colored brethren, where they perform their task under the supervision of a colored mine boss named S. Lowery, who has made a study of their habits and customs.

John Carr, Superintendent.

No. 2. The Home Mining Company's shaft mine No. 1 is located inside the city limits of Leavenworth. It employed 262 men, who worked 190 days, producing 2,568,450 bushels of coal. Price paid for mining, 80 cents per ton for unscreened coal. I might state that it does not make much difference whether the coal obtained from the Leavenworth mines is screened or not. As the coal is mined on the long-wall system, it makes very little, if any, slack, unless nut and egg coal are termed slack. Considerable improvements have been made at this mine. The main east entry has been enlarged, and retimbered from the bottom to a point 500 feet distant; as to safety and durability it is unquestionably a first-class job. The first south on east, or the entry leading to the tunnel, has been graded and enlarged and properly timbered a distance of 600 feet. The overcast has been enlarged, which has increased the volume of air. The roadways are in good condition, and the mine as a whole was well ventilated. Two fire bosses are employed, who commence their inspection about 4 o'clock every morning, examining every working-place in the mine before miners or others enter their respective places, and as proof of such inspection mark the date or day of the month at the face of such working-places. The tunnel between the Home and Riverside mines was in a fair condition. This tunnel serves as an escapement for both mines. The miners are compelled to brush their roadways five feet high, cutting and wedging it out of the solid, as no powder is used except in sulphur tops. The poor, unfortunate miner receives no compensation for such laborious work, which requires $2\frac{1}{2}$ hours each day to keep the roadway brushed close to the face. The mine was in good condition.

George Kerstead, Superintendent.

No. 3. The Home-Riverside Coal Company's mine No. 2, formerly known as mine No. 34, Kansas and Texas, employed 234 men, who worked 153 days, and produced 1,979,625 bushels of coal. Considerable improvements have been made at this mine since the Home company acquired control, such as remodeling and retimbering entries.

T. Graham, Mine Boss.

No. 4. State mine, or penitentiary shaft. The operation and

management of this mine has caused a great deal of dissatisfaction, particularly among the miners of this state in the last four to six years. Although the mine is owned, controlled and operated by the state, it has been demonstrated that the products of this mine, where convicts are employed every day in the year except Sunday, are placed in direct competition with the free miners' products in the markets; especially so, when a misunderstanding arises between the miners and operators in the regulating of wages. The free miners do not object to the convicts employed at this mine producing coal enough to supply the various state institutions, but they do seriously object, particularly in Leavenworth and Osage counties, to mine coal under the guise of free miners and be compelled to compete with convict labor in the market. Several promises have been made to the miners before election, by various candidates when soliciting their suffrages, that in the event of their election, they, the candidates and prospective members of the legislature, would assist in enacting into law a measure which would prohibit the mining of coal at the penitentiary mine except for state institutions. The miners of Leavenworth county were gulled again by promises of redemption, and elected as representatives members from that county who pledged themselves to assist and cause to be enacted a law similar to the following house bill:

House bill No. 60, by Mr. Hackbusch.

AN ACT relating to the penitentiary coal mine at Lansing, Kas.
Be it enacted by the Legislature of the State of Kansas:

Section 1. That it shall be unlawful to mine coal at the state coal mine at Lansing except for state and charitable institutions: Provided, That this act shall not be held or construed to affect existing contracts for coal at such mine.

Sec. 2. This act shall take effect and be in force from and after its publication in the statute book.

PROPOSED AMENDMENT: Section 1. That the warden of the state penitentiary, at Lansing, is hereby prohibited from adding to the regular force of miners employed in the coal mines of the state at such time when such additional force employed would enter into conflict with mining free labor troubles that might be then pending in the state.

The miners' unions at Leavenworth sent six as a committee to Topeka to lobby for this particular bill. Your humble servant was there also, and diligently watched the mode of procedure and listened to the piteous appeals of some of our republican members, in their eloquence denouncing a system which would compel the free miner to compete with the convict miner. No doubt Mr. Cubbison, of Kansas City, and other members of the house who played the roll of Judas, were congratulated by those deluded miners from Leavenworth. However, this bill referred to had clear sailing until the last

act was about to be played, viz., the final passage of this measure the Leavenworth miners so anxiously expected to become a law; but, lo and behold, it met the fate of all such labor measures, and the great advocates were not present, but instructed their colleagues to be sure and vote against the measure on its final passage! We were present when the bill was killed in the house. Thus labor received another stinging blow at the hands of hypocritical statesmen which may prove a lesson in the future to educate the oft-deluded and misrepresented miners in the fact that if they are to be represented they must select men from among their own ranks.

An average of 389 convicts and guards were employed at the penitentiary mine, who worked 313 days. The amount of coal produced was 1,543,905 bushels. I do not deem it necessary at this time to begin to give a descriptive history of this mine or the shafts in connection therewith, as so-called experts on several occasions made various examinations, so it is said, all of whom knew as much about a coal mine or shaft as a billy-goat would know about the ten commandments. Bogus investigations were made at the request of the celebrated Mr. Bunn and others, all of which was but a farce and a delusion. I made a report of that part of the institution, viz., the mine, to the governor. I also made it without fear or favor. I have nothing to retract, though I understand I received a great deal of criticism; but you will notice by the proceedings, that I never was called in question, as it was realized that I could not be used as a cat's-paw and would not support only what was just and honorable.

LINCOLN COUNTY.

Production, 2,480 tons or 62,000 bushels; estimated value, \$8,060. Number of men employed, 41.

No. 1. The L. P. Nelson shaft mine is a horse-power mine, located $2\frac{1}{2}$ miles north of Denmark. This mine worked 180 days. The miners are paid \$2.25 per ton for mining. This shaft has been repaired since my first visit, which makes it a little safer. There are two openings to this mine. Natural ventilation.

L. P. Nelson, Owner, Denmark.

No. 2. The N. B. Alley shaft mine is a horse-power mine, located 14 miles northeast of Sylvan Grove. This mine worked 150 days, and employed from 10 to 15 men. Natural ventilation. Only works in winter.

N. B. Alley, Boss, Yorktown.

No. 3. The Peter Brook slope mine is a horse-power, located two miles north of Pottersburg, on Spillman creek. This mine only em-

ployed seven men. The number of days worked was 152. This slope is only operated in winter, for local trade.

Peter Brook, Boss, Pottersburg.

No. 4. The Spier's shaft mine is a horse-power mine located $3\frac{1}{2}$ miles north of Pottersburg. This mine has been leased by Harmon Petefish. Seventeen men and two boys were employed. The price paid for mining is \$2.20 per ton. This mine is operated in winter months for local trade only. Harmon Petefish, Boss, Rosetta.

No. 5. The A. F. Buseman shaft mine is located south of Denmark, but was not in operation on the occasion of visit to that part of the county. A. F. Buseman, Denmark.

LINN COUNTY.

Production, 58,476 tons or 1,461,900 bushels; estimated value, \$73,095. Number of men employed, 210.

No. 1. The Mine Creek Coal Company's shaft mine No. 1, located two miles east of Pleasanton, on a switch of the Missouri Pacific railway, employed 90 men, who worked 96 days during the year. Price paid for mining, 80 cents per ton in summer and 90 cents in winter. This mine was in first-class condition on the occasion of my last visit. The roadways are brushed five feet in height from rail. Average thickness of coal, two feet eight inches. For ventilating purposes, a 10-foot fan has been substituted in place of a furnace. Complaints were made to this office, and to the governor's office also, of the method employed in weighing the miners' output of coal as being incorrect. By instructions from the governor, I examined the scales at this mine, and found a balance weight of 138 pounds in excess of the weight of the empty car; but as far as the mine was concerned, it was in good condition.

Hugh Reid, Mine Boss.

No. 2. William J. Thirwell's shaft mine, located one mile north of Pleasanton, on a switch of the Kansas City, Fort Scott & Memphis railroad. This mine employed an average of 20 men, who worked 140 days. Price paid for mining is $3\frac{1}{2}$ and 4 cents per bushel. This mine is in fair condition.

W. J. Thirwell, Mine Boss.

No. 3. A. F. Seright's shaft mine is a horse-power, located $2\frac{1}{2}$ miles east of Pleasanton. This mine was not in operation on the occasion of my last visit. A. F. Seright, Owner.

No. 4. Barker Bros.' mine, two miles southeast of Pleasanton, suspended operation January, 1894.

No. 5. The Connor's drift mine, southeast of Pleasanton, has been abandoned.

No. 6. T. W. Gage's shaft mine is a horse-power, located two miles west of Amsterdam, Mo. This mine has no railroad connections, and does only a local trade. Employs two and sometimes five men. Natural ventilation. This mine was not in very good condition. They promised to make improvements

T. W. Gage, Owner.

No. 7. The Bradly & Vernon Coal Company's shaft mine is located southeast of Boicourt depot. I visited this mine on several occasions, and always found a change in the system of operation. Face track seemingly proved a failure in this mine. Electric mining machines were introduced, which proved a failure also. At present the mine is operated under the old-time system of long-wall, which is claimed gives better satisfaction. There are two openings to this mine, but up to date no means of an escapement have been perfected in the air-shaft, although several promises have been made to have a stairway constructed therein. On the occasion of my last visit I notified Mr. Bradley, who promised to comply with the requirements of the law. I also wrote on several occasions to the company's office to ascertain the amount of coal mined and the number of days worked, but failed to get an answer, therefore I am unable to give proper data. This mine was not in a commendable condition.

M. Taney, Mine Boss.

No. 8. The Ben Goode shaft mine is a horse-power, located $1\frac{3}{4}$ miles east of Amsterdam, Mo. The Goode family mine coal in winter months for local sale, and mine according to their own idea. On the occasion of my first visit, this shaft was in a dangerous condition, but since that time considerable improvements have been made.

Ben Goode, Owner.

No. 9. The Vantyle mine was not in operation when I visited that section. I made inquiry by mail on two occasions to ascertain if it had resumed operation, but failed to get an answer.

No. 10. The Ben Cooper, or sink, mine is a horse-power, located six miles east of LaCygne. It employed about seven men, who worked 200 days during the year. This mine is not operated in spring or summer months. The condition of this mine has been improved since I caused an air-shaft to be sunk.

G. P. Knight, Mine Boss.

No. 11. The Clyde Vincent mine is a horse-power, located two miles southeast of Pleasanton. It suspended operation in January, 1894.

No. 12. The James Sparks slope mine, located $1\frac{3}{4}$ miles west of Worland, Mo., worked 90 days. Mr. Sparks acts as weigh boss and mine boss. Only a few miners are employed, except in winter months. Mr. Sparks's address is Worland, Mo.

I have included the amount of coal produced in strip banks in total; also the number of men employed in strip banks are included in the total number of employes.

LYON COUNTY.

Production, 360 tons or 9,000 bushels; valuation, \$900. Number of men employed, 10.

I know but one mine in operation in this county, T. S. Kelly's shaft mine, a horse-power, located $2\frac{1}{2}$ miles east of Neosho Rapids. This mine commenced operation October, 1894, and only produced 9,000 bushels of coal. The mine has no railroad connections, and only a local trade. Price paid for mining, $7\frac{1}{2}$ cents per bushel.

T. S. Kelly, Mine Boss.

OSAGE COUNTY.

Production, 296,011 tons (short) or 7,400,275 bushels; estimated value, \$555,020.62. Number of mines in operation in 1894, 56; number of miners and others employed, 1,887. Sixty-eight of this number were boys. Average number of days worked per mine, 175.

DIRECTORY OF MINE OPERATORS IN OSAGE COUNTY.

Office No.	Operators.	Mine.	Name of superintendent.	Post-office address.
1	Carbon Coal Company.....	No. 9, Peterton.....	Robt. Craig.....	Osage City.
2	Carbon Coal Company.....	No. 10, Scranton.....	" " " " " " " "	" " " "
3	Carbon Coal Company.....	No. 12, Scranton.....	" " " " " " " "	" " " "
4	Carbon Coal Company.....	No. 20, Osage City..	" " " " " " " "	" " " "
5	Carbon Coal Company.....	No. 22, Osage City..	" " " " " " " "	" " " "
6	Carbon Coal Company.....	No. 23, Osage City..	" " " " " " " "	" " " "
7	Carbon Coal Company.....	No. 24, Osage City..	" " " " " " " "	" " " "
8	Carbon Coal Company.....	No. 25, Osage City..	" " " " " " " "	" " " "
9	Carbon Coal Company.....	No. 26, Peterton.....	" " " " " " " "	" " " "
10	Carbon Coal Company.....	No. 27, Osage City..	" " " " " " " "	" " " "
11	Western Fuel Company.....	No. 2, Osage City..	Gust. Johnston ..	" " " "
12	Western Fuel Company.....	No. 5, Osage City..	" " " " " " " "	" " " "
13	Western Fuel Company.....	No. 6, Osage City..	" " " " " " " "	" " " "
14	Enterprise Coal Company.....	Osage City.....	A. Anderson.....	" " " "
15	Black Diamond Coal Company.....	Hershey.....	Jno. Hershey.....	" " " "
16	Swedish Coal Company.....	Rosenquist.....	B. A. Rosenquist..	" " " "
17	Matthew Waddell.....	Waddell.....	Matthew Waddell..	" " " "
18	A. W. Granstrom.....	No. 4, Osage City..	A. Granstrom.....	" " " "
19	A. W. Granstrom.....	No. 5, Osage City..	" " " " " " " "	" " " "
20	A. W. Granstrom.....	No. 6, Osage City..	" " " " " " " "	" " " "
21	Jno. Johnston.....	Johnston.....	Jno. Johnston.....	" " " "
22	Lundquist & Oleson.....	Lundquist.....	" " " " " " " "	" " " "
23	Sunflower Coal Company.....	Sunflower.....	Wm. Simms.....	" " " "
24	Ed. Whalen.....	Whalen.....	" " " " " " " "	" " " "
25	Scandinavian Coal Company.....	No. 6, Peterton.....	A. B. Cooper.....	" " " "

DIRECTORY OF MINE OPERATORS IN OSAGE COUNTY—CONCLUDED.

Office No.	Operators.	Mine.	Name of superintendent.	Post-office address.
26	Coughlin Bros.....	Coughlin.....	Jno. Coughlin.....	Peterton.
27	R. Underwood.....	Underwood.....	R. Underwood.....	Burlingame.
28	Zucea Coal Company.....	Zucea.....	Jas. Zucea.....	" "
29	Gus. Hopkins.....	Hopkins.....	Hopkins.....	" "
30	Burlingame Coal Company.....	No. 1, Burlingame.....	W. B. Oliver.....	" "
31	Burlingame Coal Company.....	No. 4, Burlingame.....	" "	" "
32	Thos. Whitcomb.....	Alliance.....	T. Whitcomb.....	" "
33	Jno. D. Jack.....	Jack.....	Jno. D. Jack.....	" "
34	Jno. D. Jack.....	Sand Bank.....	" "	" "
35	Central Coal and Mining Company..	Central.....	— Hopkins.....	" "
36	Burkville Coal and Mining Company..	Burkville.....	N. H. Lee.....	" "
37	Isaac Champion.....	Champion.....	I. Champion.....	" "
38	Turner Bros.....	Turner.....	J. Turner.....	" "
39	Hoggins & Ross.....	Ross.....	G. Hoggins.....	" "
40	Sturman Bros.....	Fair Ground.....	G. Sturman.....	" "
41	Plum Creek Coal Company.....	Plum Creek.....	Archie Ure.....	" "
42	Belleville Coal and Mining Company	Belleville.....	Robt. Elliot.....	Scranton.
43	James Ingham.....	Ingham.....	J. Ingham.....	" "
44	Patrick Ryan.....	Ryan.....	P. Ryan.....	" "
45	Thomas Martin.....	Martin.....	T. Martin.....	" "
46	Thomas Chappell.....	No. 1, Scranton.....	T. Chappell.....	" "
47	Thomas Chappell.....	No. 2, Scranton.....	" "	" "
48	Harry Isaac.....	No. 4, Scranton.....	H. Isaac.....	" "
49	Harry Isaac.....	No. 5, Scranton.....	" "	" "
50	Harry Isaac.....	No. 6, Scranton.....	" "	" "
51	Williamson & Gates.....	Williamson.....	W. R. Williamson..	" "
52	W. H. Thomas.....	Excelsior.....	W. T. Thomas.....	Carbondale.
53	Rutter & Stevens.....	Stevens.....	Jas. Rutter.....	" "
54	N. D. Matthews.....	Matthews.....	N. D. Matthews.....	Quenemo.
55	Reis Lewis.....	Lewis.....	R. Lewis.....	Aryonia.
56	W. Jeremay.....	Jeremay.....	W. Jeremay.....	" "

Record of Inspection.

No. 1. Carbon Coal Company's mine No. 9 is located on a switch of the Atchison, Topeka & Santa Fe railroad, at Peterton. This mine is commonly called the "chute" mine, as the engines are generally coaled at that point. This mine employed an average of 80 men and 3 boys. There are five openings to this mine, ventilated by two furnaces. This mine was in good condition.

John Craig, Mine Boss.

No. 2. Carbon Coal Company's mine No. 10 is a horse-power, located within the city limits of Scranton on a switch of the Atchison, Topeka & Santa Fe railroad. The mine has two openings, and a stairway in the escapement shaft. This mine has been in operation nine years. Ventilation by furnace. Air divided into four separate sections. This is the most extensive mine around Scranton, and employed an average of 100 men and 25 boys. Ventilation and roadways in good condition.

A. Kirkwood, Mine Boss.

No. 3. Carbon Coal Company's shaft mine No. 12 is located one-half mile west of Scranton, on a switch of the Atchison, Topeka & Santa Fe railroad. Two openings, and ladder in hoisting shaft. Employs an average of 90 men and 5 boys. Ventilation by furnace. Air divided into four separate sections. Ventilation and

roadway in this mine were in good condition except fourth north entry, in which air was very dull, on account of falls, as the roof is very bad and hard to keep in this entry.

Charles Hudcheson, Mine Boss.

No. 4. Carbon Coal Company's mine No. 20 is located at Osage City, on a switch of the Atchison, Topeka & Santa Fe railroad. Has two openings, and ladders in both shafts. Ventilation by furnace. This mine was in a deplorable condition for want of air. I notified Mr. Craig, the superintendent, to make the necessary improvements immediately, which were done.

Archie Craig, Mine Boss.

No. 5. Carbon Coal Company's mine No. 22 is located at Osage City, on a switch of the Atchison, Topeka & Santa Fe railroad. Ventilation by furnace. Two openings, and ladder in hoisting shaft. This mine was in first-class condition as a whole. Employs an average of 78 men and 5 boys.

Ed. Cliff, Mine Boss.

No. 6. Carbon Coal Company's mine No. 23 is located at Osage City, on a switch of the Atchison, Topeka & Santa Fe railroad. Employs an average of 108 men and 4 boys. Ventilation by furnace, and air divided into four separate sections. This mine is connected with mine No. 24, which can be used as an escapement in case of danger. Ventilation and roadways in good condition.

Ed. Roberts, Mine Boss.

No. 7. Carbon Coal Company's shaft mine No. 24 is located on a switch of the Lyndon branch of the Atchison, Topeka & Santa Fe railroad. Employs an average of 100 men and 8 boys. Ventilation by furnace. Air is divided into four separate sections. Ladder in main shaft. This mine was well ventilated, and in good condition as a whole.

William Waddell, Mine Boss.

No. 8. Carbon Coal Company's mine No. 25 is located on a switch of the Atchison, Topeka & Santa Fe railroad, at Osage City. Employs an average of 60 men and 3 boys. Ventilation by furnace; three divides in air current; ladder in hoisting shaft. The miners experience considerable trouble in this mine on account of water. Condition of mine, average.

Samuel Hughes, Mine Boss.

No. 9. Carbon Coal Company's mine No. 26 is located at Perton, on a switch of the Atchison, Topeka & Santa Fe railroad. Employs an average of 40 men and 2 boys. Two openings; ladder in hoisting shaft; ventilation by furnace. Mine in fair condition.

John St. John, Mine Boss.

No. 10. Carbon Coal Company's mine No. 27 is located south of Osage City, on a switch of the Atchison, Topeka & Santa Fe railroad. Employs an average of 75 men and 5 boys. Ventilation by furnace;

four divides in air current. This mine is very dry. Ventilation and roadway in fair condition.

James Main, Mine Boss.

Robert Craig is superintendent of all the above mines.

No. 11. Western Fuel Company's mine No. 2 is located two miles northeast of Osage City, on a switch of the Lyndon branch of the Atchison, Topeka & Santa Fe railroad. Employs an average of 45 men and 4 boys. Ventilation by furnace. The north side of this mine was fairly ventilated, but the south side was in a very bad condition. The mine boss promised to attend to the defective ventilation on the south side immediately.

William Jenkins, Mine Boss.

No. 12. Western Fuel Company's mine No. 5 is located $1\frac{3}{4}$ miles northeast of Osage City, on a switch of the Atchison, Topeka & Santa Fe railroad. This mine has not been in operation during the summer or autumn months on account of depression in coal trade.

No. 13. Western Fuel Company's mine No. 6 is located west of Osage City, on a switch of the Missouri Pacific railway. Employed an average of 50 men. Has two openings; ventilation by furnace. This mine was in excellent condition.

William Simms, Mine Boss.

Gust Jonson is superintendent of the Western Fuel Company's mines above.

No. 14. The Enterprise Coal and Mining Company's mine is located two miles northeast of Osage City, on a switch of the Lyndon branch of the Atchison, Topeka & Santa Fe railroad. Employs an average of 60 men and 4 boys. Ventilated by furnace; two divisions in air current. Roadways wet and muddy; ventilation fair.

Andrew Anderson, Mine Boss.

No. 15. The Black Diamond Coal and Mining Company's mine is located two miles east of Osage City, on a switch of the Missouri Pacific railway. Employed an average of 43 men. The north side of this mine is worked out. Ventilation in this mine was not very good, as the furnace is willfully neglected.

W. T. Noll, Mine Boss.

John Hersly, Superintendent.

No. 16. The Swedish Coal Company's mine is located inside the city limits of Osage, and has no railroad connection. Hauls coal in wagons to Atchison, Topeka & Santa Fe and Missouri Pacific switches. The mine has two openings, and employs an average of 35 men. This mine made connection with an old abandoned shaft

mine, which is used as an air-shaft and an escapement. Condition of mine, fair. G. Olson, Mine Boss.

No. 17. The Matthew Waddell mine is located one mile north of Osage City. This mine has no railroad connection. Hauls coal to railroad switch. Employs an average of 16 men. Ventilated by furnace, and in good condition. R. Waddell, Mine Boss.

No. 18. The A. W. Granstrom mine No. 4 is located south of Osage City. Has no railroad connection. Hauls coal to Missouri Pacific switch. Employed an average of 15 men. The mine is nearly worked out. Ventilation and roadway in bad condition. Charles Sharpless, Mine Boss.

No. 19. A. W. Granstrom's mine No. 5 is located on a switch of the Missouri Pacific railway, one-half mile west of Osage City. Employs an average of 30 men. Considerable improvements have been made in and around this shaft mine. The ventilation is good. This mine formerly belonged to the Pittsburg Coal and Mining Company. Peter Froust, Mine Boss.

No. 20. A. W. Granstrom's mine No. 6 is located one mile west of Osage City. Has no railroad connection. Hauls coal to Missouri Pacific switch at mine No. 5. Two openings, and natural ventilation. Employs 10 men. Mine formerly belonged to the Pittsburg Coal and Mining Company. P. Froust, Mine Boss.

No. 21. The John Johnson mine is located north of Osage City. Has no railroad connection. Two openings; ventilation by furnace. Employs 17 men. Hauls coal in wagons to Missouri Pacific switch. This mine was in first-class condition, and formerly belonged to Johnson & Anderson. J. Johnson, Mine Boss.

No. 22. The Lundquist & Oleson slope mine is located south of Osage City, on the Carbon Coal Company's land. Has no railroad connection. Hauls coal in wagons to Missouri Pacific switch. Employed an average of 13 men. Mine is ventilated by furnace, and was in first-class condition. A. Lundquist, Mine Boss.

No. 23. The Sunflower mine is located $1\frac{1}{2}$ miles east of Osage City. This mine has no railroad connection. Coal is hauled in wagons to Missouri Pacific switch. The mine has two openings, and is ventilated by furnace. Employs an average of nine men. This mine was in good condition. J. J. Briggs, Mine Boss.

No. 24. The Whalen drift mine is located south of Osage City. No railroad connection. The mine has two openings; ventilation by furnace. Mine in good condition. This mine formerly belonged to Ryan & Whalen. Ed. Whalen, Mine Boss.

No. 25. The Scandinavian Coal and Mining Company's mine is

located one-fourth mile north of Peterton, on a switch of the Atchison, Topeka & Santa Fe railroad. There are two openings to this mine. Ventilation by furnace. Employs an average of 47 men. This mine was in good condition.

Charles Anderson, Mine Boss.

No. 26. Coughlin Bros.' mine is a horse-power, located one-half mile north of Peterton. A switch has been laid to this mine from the Atchison, Topeka & Santa Fe railroad. The mine has two surface openings, and is in fair condition.

John Coughlin, Boss.

No. 27. Richard Underwood's shaft mine is a horse-power, located $1\frac{1}{2}$ miles south of Burlingame. Has no railroad connection. This mine has no escapement or air-shaft as yet. Mr. Underwood promised to sink an air-shaft at an early date. Idle most of the time on account of depression of coal in market.

No. 28. Zucea Coal Company's mine is a horse-power, located two miles south of Burlingame, on a switch of the Atchison, Topeka & Santa Fe railroad. There are two surface openings, with a stairway in both shafts. Employs an average of 30 men. The general condition of this mine has been greatly improved since my first visit, particularly ventilation and roadway. James Zucea, Mine Boss.

No. 29. Gus. Hopkins's shaft mine is a horse-power, located $3\frac{1}{2}$ miles southeast of Burlingame. Natural ventilation. Employs two to four men.

Gus. Hopkins, Mine Boss.

No. 30. Burlingame Coal and Mining Company's shaft mine No. 1 is a horse-power, located at Burlingame, on a switch of the Atchison, Topeka & Santa Fe railroad. Ventilation by furnace. Employs 15 men. Connections are made with mine No. 4. This mine was well ventilated, and in good condition.

George Munroe, Mine Boss.

No. 31. Burlingame Coal and Mining Company's shaft mine is a horse-power, located in the city limits of Burlingame, on a switch of the Atchison, Topeka & Santa Fe railroad. This mine has three surface openings. Ventilation by furnace. Mine in fair condition.

George Munroe, Mine Boss.

No. 32. Thomas Whitcomb's shaft mine is a horse-power, located $2\frac{1}{2}$ miles northeast of Burlingame. No railroad connections. An air-shaft was sunk last summer. Employs 10 men. Mine in good condition.

Thomas Whitcomb, Mine Boss.

No. 33. The John Jack's mine is a horse-power, located one mile east of Burlingame. No railroad connections. Two openings.

Ventilation by furnace. Employs 12 men. Mine in good condition.
J. D. Jack, Mine Boss.

No. 34. The Sand Bank shaft mine is a horse-power, located south of Burlingame, on a switch of the Atchison, Topeka & Santa Fe railroad. This mine formerly belonged to the Burlingame Coal and Mining Company. Commenced operation the latter part of 1894. Has not been in operation for the last three years previous to that time. Two surface openings, and well ventilated. Mine in good condition.
J. D. Jack, Mine Boss.

No. 35. Central Coal and Mining Company's shaft mine is a horse-power, located east of Burlingame. Has no railroad connections. Two surface openings, and ladder in air-shaft. Operated at present by Mrs. Mings & Son. Mine in good condition, and ventilated by furnace.
Alfred Cole, Mine Boss.

No. 36. Burkville Coal Company's shaft mine is a horse-power, located one mile east of Burlingame. No railroad connections. Mine in fair condition. Employs from 5 to 10 men.
N. H. Lee, Mine Boss.

No. 37. The Champion shaft mine is a horse-power, located three miles southeast of Burlingame. No railroad connections. Hauls coal to railroad switch at Burlingame. This mine was not properly ventilated at my first visit, but has been improved since. Operated in 1893 by Slater & Wafer.
George McMurda, Mine Boss.

No. 38. Turner Bros.' shaft mine is a horse-power, located one mile south of Burlingame. No railroad connections. Two surface openings. Stairway in air-shaft. Ventilated by furnace. Roadways wet and muddy; air dull.
Peter Turner, Mine Boss.

No. 39. The Ross shaft mine is a horse-power, located three miles northeast of Burlingame, on a switch of the Atchison, Topeka & Santa Fe railroad. Two surface openings. Ventilation by furnace. Employs an average of 20 men. A great deal of improvement has been made, such as cribbing shafts, and a general overhauling of mine. This mine formerly belonged to William Foster; at present operated by Hoggins & Ross.
George Ross, Mine Boss.

No. 40. Sturman Bros.' shaft mine is a horse-power, located south of Burlingame. No railroad connection. Hauls coal to Atchison, Topeka & Santa Fe switch in wagons. Mine has two surface openings. Ventilated by furnace. Roadways wet and muddy. This mine was fairly ventilated.
George Sturman, Mine Boss.

No. 41. The Plum creek mine is a horse-power, located 3½ miles

miles southwest of Burlingame. Employs four men. Ventilation by furnace. Has one opening. This mine is poorly ventilated.

Archie Ure, Superintendent.

No. 42. The Belleville Coal Company's mine is a steam-power, located one-half mile west of Scranton, on a switch of the Atchison, Topeka & Santa Fe railroad. Ventilation by grate furnace. Employs 75 men. Mine in fair condition.

Robert Elliot, Superintendent.

No. 43. The Ingham shaft mine is a horse-power, located two miles southwest of Scranton, on a switch of the Atchison, Topeka & Santa Fe railroad. Ventilated by furnace. Has two openings. Ventilation fair.

James Ingham, Superintendent.

No. 44. The Ryan shaft mine is located one-half mile east of Scranton, on a switch of the Atchison, Topeka & Santa Fe railroad. Employs 32 men and 3 boys. Ventilation by furnace. Ventilation was very bad owing to not having a door on south entry.

Mike Ryan, Superintendent.

No. 45. The Thomas Martin shaft mine is located one-half mile southwest of Scranton. Ventilation by furnace. Has two openings. This mine is well ventilated, and in good condition.

Thomas Martin, Superintendent.

No. 46. The Chappell shaft mine No. 1 is located one-half mile west of Scranton, on a switch of the Atchison, Topeka & Santa Fe railroad. Ventilation by furnace. Has three openings. This mine is in pretty fair condition.

James Chappell, Mine Boss.

No. 47. The Chappell shaft mine No. 2 is located one-half mile west of Scranton, on a switch of the Atchison, Topeka & Santa Fe railroad. Employs 40 men. Ventilation by furnace. Has three openings. Ventilation in pretty fair condition.

Thomas Chappell, Superintendent.

No. 48. The Harry Isaac shaft mine No. 4 is located in Scranton, on a switch of the Atchison, Topeka & Santa Fe railroad. This mine has not been operated to any extent in 1894, therefore I cannot describe its conditions.

Harry Isaac, Superintendent.

No. 49. The Harry Isaac mine No. 5 is steam-power. Is located $2\frac{1}{2}$ miles southwest of Scranton, on a switch of the Atchison, Topeka & Santa Fe railroad. Has three openings. Employs 40 men. Ventilated by furnace. This mine is fairly ventilated.

William McMurdo, Mine Boss

No. 50. The Harry Isaac shaft mine No. 6 is located south of

Scranton. This mine has not been operated to any extent in 1894. Was not in operation during my visits in that locality.

Harry Isaac, Superintendent.

No. 51. The Williamson & Gates mine is located $1\frac{1}{4}$ miles east of Scranton. Employs eight men. Has two openings. Ventilation by furnace. Mine in fair condition.

W. R. Williamson, Superintendent.

No. 52. The William H. Thomas shaft mine is located three-fourths of a mile east of Carbon, on a switch of the Missouri Pacific railway. Employs four men. Has four openings, and two escape-ments. Mine well ventilated, and in good condition.

W. H. Thomas, Superintendent.

No. 53. The Rutter & Stevens mine is located $1\frac{1}{4}$ miles east of Carbondale. Has two openings. Ventilation fair.

James Rutter, Superintendent.

No. 54. The Matthews drift mine is located $2\frac{3}{4}$ miles south of Quenemo. Employs 12 men. Has two openings. Natural ventilation. In pretty fair condition. N. D. Matthews, Superintendent.

No. 55. The Lewis drift mine is located $1\frac{1}{2}$ miles west of Arvonja. Employs four men. Has two openings. Natural ventilation. Mine in pretty fair condition.

Rees Lewis, Superintendent.

No. 56. The Jeremay drift mine is located one mile west of Arvonja. Mine in fair condition. J. W. Jeremay, Superintendent.

REPUBLIC COUNTY.

Production, 8,242 tons or 206,050 bushels; estimated value, \$22,665.50. Number of men employed, 22.

The S. F. Curtis shaft mine, a horse-power, is the only mine in this county that I know of. This mine is located eight miles north-east of Concordia, near Minersville. This mine has the best record of any mine in the state, as it worked 300 days during the year. The price paid for mining is 7 cents per bushel. Miners push their coal to the bottom, and cage it. This is a lignite coal, nevertheless it sells readily for \$3.25 per ton in summer and \$3.75 in winter. I have not been notified of any accident in connection with this mine.

S. F. Curtis, Superintendent, Minersville, Cloud county.

RUSSELL COUNTY.

Production, 900 tons or 22,500 bushels; estimated value, \$2,925. Number of men employed, 18.

The three small drift mines in this county are operated in winter months only. These mines are scarcely worth mentioning. No regular miners would work in such places. The entries are not $2\frac{1}{2}$ feet in height in some places.

The Abe Heard drift is located four miles south and three miles west of Wilson. Price paid for mining is \$2 per ton. Post-office address: Wilson, Ellsworth county.

The Joseph Menzie drift mine is located five miles southwest of Bunker Hill. This drift was opened up in May, 1894. Post-office address: Bunker Hill.

The J. Neely drift mine is located $3\frac{3}{4}$ miles southwest of Wilson. Post-office address: Wilson, Ellsworth county.

SHAWNEE COUNTY.

Production, 6,000 tons or 150,000 bushels; estimated value, \$17,500. Number of men employed, 45.

The principal mines in this county are located west of Topeka.

The M. V. Carpenter shaft mine, a horse-power, is located $1\frac{3}{4}$ miles west of the Topeka Insane Asylum. Depth of shaft, 28 feet; size, 6x10; system, long-wall; ventilation by furnace; thickness of coal, 12 inches. Miners are paid 8 cents per bushel in winter for mining. Coal sells at from \$2.50 to \$3 per ton at mine. Post-office address: Topeka.

The Heaton shaft mine is a horse-power, located $2\frac{1}{2}$ miles west of Topeka city limits. Depth of shaft, 42 feet; size, 6x8; system, long-wall; ventilation by grate fire. There is no second opening to this mine.

D. Heaton, Boss, Topeka.

The Harrison drift mine is located three miles south and two miles west of Topeka. This mine was not in operation when I visited it.

John Rohm leased a shaft mine, one mile west of West Tenth street, Topeka. Depth of shaft, 30 feet; no second opening; ventilation by grate fire. The lessee pays 1 cent per bushel royalty. Post-office address: Topeka.

The small mines at Silver Lake and Dover are operated in winter only.

SUMMARY OF THE COAL-PRODUCING COUNTIES OF KANSAS FOR 1894.

TABLE showing the amount of coal in tons and bushels; also, estimated valuation, and the number of employes employed at mines.

Office No...	COUNTIES.	Tons.	Bushels.	Estimated valuation.	No. of employes employed at mines for 1894.
1	Atchison county.....	2,500	62,500	\$5,625 00	40
2	Bourbon county.....	19,200	480,000	33,600 00	122
3	Brown county.....	2,000	50,000	4,500 00	14
4	Chautanqua county.....	1,520	38,000	3,800 00	20
5	Cherokee county.....	1,036,614	25,915,350	1,295,767 50	2,437
6	Cloud county.....	3,700	92,500	9,250 00	75
7	Coffey county.....	3,500	87,500	7,875 00	30
8	Crawford county.....	1,809,836	45,245,900	2,262,295 00	3,850
9	Elk county.....	800	20,000	2,000 00	7
10	Ellsworth county.....	2,010	50,250	6,532 50	28
11	Franklin county.....	16,021	400,525	32,042 00	140
12	Labette county.....	3,400	85,000	7,650 00	32
13	Leavenworth county.....	337,644	8,441,100	548,671 50	1,312
14	Lincoln county.....	2,480	62,000	8,060 00	41
15	Linn county.....	58,476	1,461,900	73,095 00	210
16	Lyon county.....	360	9,000	900 00	10
17	Osage county.....	296,011	7,400,275	555,020 62	1,887
18	Republic county.....	8,242	206,050	22,665 50	22
19	Russell county.....	900	22,500	2,925 00	18
20	Shawnee county.....	6,000	150,000	17,500 00	45
	Totals.....	3,611,214	90,280,350	\$4,899,774 62	10,340

Kansas still continues to come to the front in the production of coal, and notwithstanding the depression of the coal market in 1894, the output continues to increase.

In 1893 the total production of the 18 coal-producing counties in Kansas was 2,881,048 tons (short) or 72,048,268 bushels. In 1894 the production of coal mines increased to 3,611,214 tons or 90,280,350 bushels—an increase of 729,284 tons or 18,232,082 bushels.

Although 20 different counties in Kansas are coal-producing, Cherokee and Crawford counties produced 71,161,250 bushels of the entire output, and 16½ million bushels of the increased production of 1894 as compared with the output of 1893. Crawford county alone produced over one-half of the total production of the state in 1894. The Cherokee and Pittsburg Coal Company's mine No. 1, Frontenac, Crawford county, produced over 8 million bushels in 1894—three-fourths of a million more than the entire output of the 56 mines in Osage county. The Kansas and Texas Coal Company's mine No. 18, Cherokee county, which is leased and operated by W. H. Barrett, ranks second in the production of coal among the mines of Kansas for 1894, producing over 5 million bushels.

The coal mines of the 20 coal-producing counties of the state, Crawford and Cherokee counties not included, only produced 764,764 tons (short) or 19,119,100 bushels. Thus it will be seen that Crawford and Cherokee counties are abundantly stored with nature's wealth. The aggregate value of the mineral products of

Crawford and Cherokee counties alone, for the year 1894, amounts to over $3\frac{1}{2}$ million dollars.

The following table shows the increase of the coal-mining industry and the annual output of coal in Kansas from 1885 to 1894, inclusive:

Year.	Bushels.	Year.	Bushels.
1885.....	36,001,427	1890.....	62,901,347
1886.....	34,750,000	1891.....	68,843,114
1887.....	39,251,985	1892.....	75,181,900
1888.....	42,500,000	1893.....	72,048,268
1889.....	53,819,149	1894.....	90,280,350

FATAL ACCIDENTS OR DEATHS IN KANSAS COAL MINES FOR 1894.

Accidents.

Seventy-nine accidents occurred in and around the coal mines of Kansas during the year 1894.

Fatal Accidents.

The number of fatal accidents in connection with the coal mines of Kansas during the year 1894 was 26.

The counties in which the fatal accidents happened are as follows: Crawford 10, Cherokee 10, Osage 3, Bourbon 1, Franklin 1, Leavenworth 1; total 26.

The causes of fatal accidents were as follows: Falls of roof 10, fell down shafts 3, caught by railroad cars on switch at mine 3, explosions in mines, supposed to have been caused by coal dust 2, powder explosion 2, going back on supposed missed shots 2, caught by cage 2, heart failure 1, opening keg of powder 1; total 26.

TABLE OF FATAL ACCIDENTS FOR 1894.

No. . .	Where accident occurred.	Name.	Cause.	Date of accident.	Date of death.
1	Cherokee and Pittsburg Coal and Mining Company, mine No. 1, Frontenac, Crawford county	Jiacoma Silva	Fall of rock	January 22	January 22
2	McKinney's drift mine, Fort Scott, Bourbon county	George Bolinger	Fall of rock	January 23	January 23
3	Western Coal and Mining Company, mine No. 3, Fleming, Crawford county	Jasper Bosso	Fell down shaft	January 25	January 25
4	Pittsburg Gas Coal Company's mine, Crawford county	Robt. Radliff	Explosion in mine	January 31	February 2
5	Pittsburg Gas Coal Company's mine, Crawford county	Wm. Hantz	Explosion in mine	January 31	February 2
6	Weir Bros. mine, Cherokee county	Prosper Stephens	Powder explosion	February 7	February 7
7	Central Coal and Coke Company, mine No. 8, Cherokee county	W. H. Henson	Fall of rock	May 4	May 4
8	Central Coal and Coke Company, mine No. 7, Cherokee county	Frank Bailey	Fall of rock	May 7	May 7
9	Kansas and Texas Coal Company, mine No. 18, Cherokee county	Guy Haney	Going back on shot	May 21	May 21
10	Central Coal and Coke Company, mine No. 7, Cherokee county	James Stoker	Fall of rock	May 22	June 24
11	Durkee Coal Company, mine No. 4, Crawford county	W. T. Nicewarner	Fall of rock	May 26	May 26
12	Hamilton & Braidwood, mine No. 1, Cherokee county	Geo. Wilkinson	Heart failure	June 19	June 19
13	Western Coal and Mining Company, mine No. 5, Yale, Crawford county	Frank Saunders	Caught by railroad cars	June 30	June 30
14	Kansas and Texas Coal Company, mine No. 34, Leavenworth county	Tony Bukato	Caught by cage	July 14	July 14
15	Cherokee and Pittsburg Coal Company, mine No. 1, Frontenac, Crawford county	Felix Anderline	Going back on shot	August 25	August 25
16	Kansas and Texas Coal Company, mine No. 20, Crawford county	Salis Whited	Fall of rock	August 30	August 30
17	John Dench's mine, Fuller, Crawford county	Con Reindon	Powder explosion	September 5	September 5
18	Central Coal and Coke Company, mine No. 7, Cherokee county	Wm. Lyons	Fall of rock	September 26	October 23
19	Hamilton & Grant, mine No. 1, Crawford county	Nicholas Cresson	Caught between cage and buntings in shaft	October 19	October 19
20	Ransomville mine, Franklin county	Geo. Howell	Fall of roof	October 24	October 24
21	Central Coal and Coke company, mine No. 8, Cherokee county	G. W. Jones	Fell down shaft	October 24	October 25
22	Zable drift mine, Osage county	Jas. Cavender	Fall of roof	October 25	October 25
23	Carbon Coal Company, mine No. 25, Osage county	Emiel Myers	Caught by railroad cars on switch near mine	December 14	December 14
24	Thomas Whitcomb mine, Osage county	Guy Wilkins	Fell down shaft	December 14	December 14
25	Central Coal and Coke Company, mine No. 5, Cherokee county	James Turner	Opening powder keg with steel file	No date given	No date given
26	Hamilton & Braidwood, mine No. 1, Cherokee county	James Snodgrass	Caught by railroad cars on switch near mine	No date given	No date given

Record of Fatal Accidents for 1894.

Accident No. 1.—Fatal accident to Jiacomia Silva, at Cherokee and Pittsburg Coal and Mining Company's mine No. 1, Frontenac, Crawford county:

About 10 a. m., on January 22, 1894, Jiacomia Silva, employed as a miner in seventh south on east side, was killed within 14 feet of the face of the seventh side entry. I was notified immediately, and I went into the place where the deceased was found dead. William Bailey, one of the miners who found him dead under the rock, and John Burns, mine boss, accompanied me. I examined the surroundings very carefully, and Mr. Bailey showed me where he was lying, and the position in which he was when found. The rock that fell on him was about 10 feet in length, about $2\frac{1}{2}$ or 3 feet in width, and about 12 inches in thickness. He was about 14 feet from the face. Everything around looked safe and solid. Lots of props and cap pieces were very close to his place, consequently I could not truthfully state whether it was purely accidental, unsuspected, or whether it was negligence on part of the deceased by not putting a prop or two under the rock or not pulling it down. Deceased was a native of Italy, age 34 years, married, and left a wife and three children.

An inquest was held, as follows:

Frontenac, Kas., January 22, 1894.

Eph. Bailey, of Frontenac, Kas., first being duly sworn, testified as follows: Residence, Frontenac, Kas., and have been for six years last past; occupation miner, and have been for four years; know the body of the deceased to be that of Jiacomia Silva; have known him four years. Last saw him alive Saturday, January 20, 1894, in shaft No. 1, Frontenac, Kas.; first saw him dead at 10 a. m., Monday, January 22, 1894, in No. 1 shaft, Frontenac, Kas., in seventh south entry, east side. When I first saw him they had him from under the rock, all except one leg; he was lying stretched out, feet to the front. Saw a scar between his eyes. Put the body in a car, brought it to the bottom, came upon the cage with him, and from there to the house where he now lies. Think the death was on his own account. Believe it truly accidental. Ephraim Bailey.

Frontenac, Kas., January 22, 1894.

John Cunningham, of Frontenac, Kas., first being duly sworn, testified as follows: Reside at Frontenac, and have for 10 months; age 25 years; occupation mule driver; have worked in mines 11 years. Know the body of the person who lies here dead to be that of Jiacomia Silva. Have known him for six months. Last saw him alive at about 8 o'clock this morning; first saw him dead at about 10:30 this morning; was in his place of work, seventh south entry, east side. He was from under the rock, lying down. Saw blood marks on his face and on the back of his neck. Thought his neck was broken. Helped put him in the car, and bring him to the top.

It is the miner's place to post a dangerous rock that is near the face. Do not consider anybody responsible for the accident. There were cap pieces and posts convenient. John Cunningham.

Frontenac, Kas., January 22, 1894.

Joseph Romack, of Frontenac, Kas., first being duly sworn, testified as follows: Reside at Frontenac, Kas., and have for five years past; occupation miner, and have been for 13 years; age 29 years. Know the body to be that of Jiacomia Silva; have known him for three years. Last saw him alive this morning, at 7 o'clock, at the bottom; first saw him dead about 10 o'clock this morning, in his place, seventh south entry, east side. The rock was laying on his head, feet in front, bent forward, head between his legs. Assisted in removing the rock from him. Rock was about 9 feet long, 3 feet wide, and 10 to 12 inches thick. Think he was killed instantly. There was no one responsible but himself for his safety at that place. J. Romack.

Frontenac, Kas., January 22, 1894.

William Bailey, of Frontenac, Kas., first being duly sworn, testified as follows: Lived in Frontenac, Kas., for six years past; age 46 years; occupation miner. Know the name of the deceased to be Jiacomia Silva; have known him about four years. Last saw him alive Saturday, January 20, 1894, in shaft No. 1, at Frontenac, Kas.; first saw him dead at 10 o'clock a.m., January 22, 1894, in entry seventh south, east side. Found him sitting on the floor of the entry, feet in front, bent forward, rock on his head; back was broken. Rock was about 9 or 10 feet long; three feet wide; between 11 and 12 inches thick; was in a horseback, six feet wide. The distance from where he was sitting to the front was 14 feet. Usual time for a man to cut 14 feet in an entry, four days. It was his own negligence. The miner might have had the coal taken out and a prop put under the rock and prevented its falling. If I had been working there I would not have thought of propping it. There was timber handy if he had wanted it. He came to his death by his own neglect. He was sitting in front of the horseback. Did not have the brushing shot down where he was sitting. The place did not look dangerous. Horseback ran angling across the entry. William Bailey.

Coroner, one day's attendance, \$3; summoning jury, \$1.10; one copy subpoena, 25 cents; three additional persons, 45 cents; administering oath to four witnesses, 40 cents; 22 miles, at 10 cents per mile, \$2.20; transmitting papers, 25 cents; total, \$7.65. Clerk, \$2.

Jury: Robert Bain, \$1; John O'Leary, \$1; Levi Statham, \$1; E. B. Robinson, \$1; John Beitzinger, \$1; Eph. Angell, \$1; total, \$6.

Witnesses: William Bailey, \$1; Joseph Romack, \$1; John Cunningham, \$1; Eph. Bailey, \$1; total, \$4.

State of Kansas, Crawford County, ss.

An inquest holden at Frontenac, Kas., in Crawford county, on the 22d day of January, A. D. 1894, before me, G. E. Cole, coroner of said county, on the body of Jiacomia Silva, a person there lying dead, by the jurors whose names are hereto subscribed. The said

jurors, upon their oaths, do say that he came to his death in No. 1 shaft at Frontenac, in the seventh south entry, on east side, about 10 o'clock, Monday morning, January 22, by a fall of slate at face of said seventh south entry. We, the jurors, find that said deceased came by death accidentally, and hold no person responsible for the same. This death was not felonious.

In testimony whereof, the said jurors have hereunto set their hands the day and year aforesaid. (Signed) Robert Baird, John O'Leary, Levi Statham, E. B. Robinson, John Beitzinger, Eph. Angell.

To the State Inspector of Coal Mines, State of Kansas:

Report of John O'Byrne, employed as pit boss at No 1 colliery, at Frontenac, county of Crawford, and state of Kansas, in case of accident to John Silva, employed as a miner at No. 1 mine, owned by the Cherokee and Pittsburg Coal and Mining Company, which occurred on the 22d day of January, 1894:

We, the undersigned, have carefully examined the locality of said accident, and find that the fatal accident consisted of a broken neck and back, which was caused by the falling of rock in entry No. 7 south, on east side of No. 1 shaft, Frontenac, Kas. To the best of our judgment, the injury was an accident, and the responsibility for said accident rests upon no one.

Made this 5th day of February, 1894.

John O'Byrne, Pit Boss.

Witnesses: John Cunningham, Ephraim Bailey, William Bailey.

Report of John Cunningham, Ephraim Bailey, and William Bailey, employed as miners and drivers at No. 1 mine, at Frontenac, county of Crawford, and state of Kansas, in case of accident to John Silva, employed as a miner at No. 1 mine, owned by the Cherokee and Pittsburg Coal and Mining Company, on the 22d day of January, 1894:

We, the undersigned, have carefully examined the locality of said accident, and find that the injury consisted of a broken neck and back, which was caused by the falling of rock in entry No. 7 south, on east side of No. 1 shaft, Frontenac. Silva was driving this entry through a horseback, and rock fell on him while at work from a slip in the roof. Piece of rock would average about $7\frac{1}{2}$ feet long by 2 feet wide and 10 inches thick. To the best of our judgment the injury was an accident, and the responsibility for said accident rests upon no one, but was a lack of judgment on part of miner, and that jury exonerates anyone from blame.

Made this 5th day of February, 1894.

(Signed) John Cunningham, Ephraim Bailey, William Bailey.

Witness: C. Zabriskie.

Accident No. 2.—Fatal accident to George Bolinger, at William McKinney's drift mine, Fort Scott, Bourbon county:

On the evening of January 23, 1894, the deceased, Bolinger, was

employed as a miner in the aforesaid drift mine, when his room caved in, burying him alive. A rescuing party went to work immediately, but did not reach the body until 2:30 p. m., the following day. I went to Fort Scott as soon as notified, and could not ascertain who was to blame, as I could not find Mr. McKinney or the two men who worked in the mine at the time this accident occurred. There was no inquest held. I met men, who told me it was his own fault, through carelessness by not propping his room; while others told it was Mr. McKinney's fault for not supplying the miners with props and cap pieces by which the roof could be made secure. This is the only fatal accident that I know of in Bourbon county during 1893 or 1894.

Accident No. 3.—Fatal accident to Jasper Bosso, at the Western Coal and Mining Company's mine No. 3, Fleming, Crawford county, Kansas, on January 25, 1894:

On the above date, about 7 o'clock in the morning, the deceased, Jasper Bosso, who was employed as a miner at said mine, fell down the shaft, a distance of 108 feet, and instantly killed. I was notified immediately after the accident happened. I went to the shaft mine to make inquiries, and learn the cause. It seems that it was the duty of Carl Sparks, an employe of the company, in the morning to attend to the gate at the first landing, also to ring the signal bell, which connects the shaft and the engine room, in order that the engineer may know when the miners are ready to descend. Mr. Sparks was not supposed to open the gate at the first landing until the cage was in its right place for the miners and others, who generally get on when the gate is opened by those in charge. Unfortunately, Mr. Sparks opened the gate, and the deceased, Jasper Bosso, believing the cage was at the usual place when Mr. Sparks opened the gate, walked into the shaft. The testimony before the coroner's jury plainly showed that it was impossible for the deceased to see the cage, owing to the exhaust steam and evaporation which was coming up the shaft, as said shaft was then the upcast. Mr. John Boyle, a miner, and two others, were about to follow the deceased, Bosso, thinking the cage was there. Mr. Boyle informed me that he was following Jasper Bosso, and was in the act of stepping into the shaft also when he saw the deceased, Bosso, tumble into the shaft. He, Boyle, also informed me that they relied on Mr. Sparks, whose duty it was to know that the cage was in the proper place before he would open the gate; and previous to that time, especially in the morning, the opening of the gate by Carl Sparks was an indication that the cage was in its proper place for the men

to get on, and also an invitation to step forward and onto the cage. In my opinion, it was criminal negligence on the part of Mr. Sparks by which the deceased met his death. An inquest was held on the night of January 25. I objected to the first jurors, as they were employes of the company, and everyone of them knew about how the deceased met his death, and had formed an opinion, consequently we selected new jurors—three farmers and three disinterested miners, whose names are as follows: James Ferns, farmer and miner; A. J. Nance, farmer; R. G. Jones, farmer; W. R. Grey, farmer; William Mackey, miner; Henry Bath, miner.

The witnesses were: Carl Sparks, top hand; John Boyle, miner; Alf. Jones, miner; Joe James, engineer; Barney Hale, fireman; Thomas Willie, miner.

John Boyle and Thomas Willie were at the mine, and about to go down the shaft; both of them saw the deceased, Jasper Bosso, fall down the shaft. Deceased was a native of Italy; married; left a wife and five little helpless children.

The following is the testimony before the coroner's jury:

Fleming, Kas., January 25, 1894.

John Boyle, of Fleming, Kas., first being duly sworn, testified as follows: Age, 33; occupation miner, and have been for 18 years; dig coal. Only knew the dead man by sight; have known him for one year. Last saw him alive this morning at about 7 o'clock; he was then at top to go on cage; was two or three feet from him; saw him step into the shaft; he walked straight in. I could not see for the steam whether the cage was there. I was going to enter the cage at the same time, but heard the noise he made going down the shaft, and stopped. There was steam enough to deceive a person acquainted with the mines regarding whether the cage was in place or not. Do not know how long it would be before the cage was in place after the man fell; did not hear the man on top say, "Come on, boys." I understand that when the gate is open that it is a signal to advance to where the cage should be. I would have stepped in the shaft if he had not preceded me. Previous to this morning, it has been customary for the men to advance towards the cage when the gate is open. I am of the opinion that if the topman would attend to his duty he should have known the cage was there before he opened the gate. The man walked in as the topman opened the gate. I think it was through the negligence of the topman that the man fell in the shaft. (Signed) John Boyle.

Witness: A. C. Gallagher.

Fleming, Kas., January 25, 1894.

Joseph James, of Fleming, Kas., being first duly sworn, testified as follows: Age, 39 years; occupation engineer at No. 3 shaft, Fleming, and have been for $3\frac{1}{2}$ years. Was on duty this morning; my duty is to hoist and lower anything to be handled by the engine; raise and lower by signals. Know the person who is here dead to be Joseph Bosso; have known him for one year or more. First saw

him dead this morning at about 7 o'clock; I was coming from the top landing to middle landing, and got a signal of one bell, which usually indicates stop, but on that bell at that time should mean nothing, because the bell is only used for men. I stopped anyhow, because one bell is a stop signal when the cage is moving. This bell is never used only to let the men down. I do not know that the company is responsible for any mistakes that I make. He rang the bell for the men. That showed he thought the cage was standing there to be lowered, or that he was frightened. Do not know why he rung it. Do not know where the cage was when the bell rang. I stopped, and was one foot or 10 inches from the landing. I knew the cage was not at the landing, and that there were no men on. (Signed) Joseph James.

Fleming, Kas., January 25, 1894.

Carl Sparks, of Fleming, Kas., first being duly sworn, testified as follows: Age, 38 years; occupation laborer at mines; labored at mines 14 months, dumping coal; work at the top; bell or cage the men down into the mines; open the gate, allow six men in a cage to descend at a time; unlatch the gate, and swing the gate back. Was on time this morning. When I am there, always attend to the gate myself. Men never open and close the gate themselves. Try to do so at times when there is a rush. Was no rush this morning. A man was killed at the mine this morning. As near as I can tell, when the signal bell rang from the bottom, there was a good deal of steam coming up. I thought I saw the cage come down to the landing. At that time I opened the gate. As I opened the gate, I looked towards the magazine to see if any of the boys were coming, and I saw Mr. Willey standing there, and he said there was a man fell in the shaft. The men enter the cage at the lower landing. When I looked, after being told a man had fallen in the shaft, the cage was down to the lower landing. Had not seen the dead man at the landing. Think he must have passed behind me. The cage and gate were handled in their usual way this morning. I was detailed by the way boss to let the men down. I am subject to the way boss while I work on top. Have been on the top 11 months. Open the gate, and allow six men to go on. No one opens the gate but me when the men are going in the mine. The gate is kept closed until it is supposed the men are there to go on. Am not supposed to open the gate only when the cage is on a level with the lower landing. It is a signal when I open the gate that the men should step through. I open the gate, and they step on. I opened the gate, and he stepped in the shaft. It is my place to know that the cage is at the first landing. Never asked the company to furnish me a light when the men enter the cage. (Signed) Carl Sparks.

Witness: John Brady.

Fleming, Kas., January 25, 1894.

Thomas Willey, of Fleming, Kas., first being duly sworn, testified as follows: Age, 42 years; occupation miner, and have been for three years or more. Am not acquainted with the man who was killed this morning; first saw him dead after he was brought to the top. Saw him walk off into the pit. I thought the cage had started from the top, and hurried to go down on the cage. I said to Mr.

Sparks, "Let us down," and he soon opened the gate, and the man walked in. I could not see whether the cage was in place. If it had been there, think it doubtful whether I could have seen it. If I had been ahead, expect I would have stepped in in place of him. He walked straight in. Suppose he was paying attention to what he was doing. Mr. Sparks might possibly have seen the cage if he had been looking straight at the cage when it came down. I cannot say whether Mr. Sparks's negligence caused the accident or not. I suppose he could have seen if the cage was there if he had had a lamp in his hand. I was three or four feet from the deceased when he fell in the shaft. Do not know whether the steam could be taken in some other course or not. I believe it is necessary to have a light to assist the men in getting on the cage. I believe the dead man came to his death by that fall. Opening the gate is a signal to advance towards where the cage should be. (Signed) Thomas Willey.

Fleming, Kas., January 25, 1894.

Barney Hale, of Fleming, Kas., first being duly sworn, testified as follows: Age, 35 years; occupation cageman at the bottom. Have worked in mine 10 or more years; have worked in Fleming three years. Know the person who was killed this morning. First saw him dead about 7, or about 10 minutes before, when he fell to the bottom of the shaft. Fell upon his back. His head appeared to strike on a sill on the cage seat. Did not examine the body to see what injuries it had received. (Signed) Barney Hale.

Witness: Joseph James.

Fleming, Kas., January 25, 1894.

John Brady, of Fleming, Kas., first being duly sworn, testified as follows: Age, 43 years; occupation miner for more than 20 years. Have worked at Fleming four years. Saw him this morning, on or about 7 o'clock. He fell in the bottom on cage seat. Saw him strike. Appeared to fall on his back, with his feet up. His head was laying on the sill. I partly raised him, and some of the men came and helped me. He fell 118 feet, in my opinion. Did not examine the body to see what injuries it had received. Went down the shaft this morning. I went on the cage that went before the man. I could not see the cage; felt for it with my foot. The man at the top does not say anything when he opens the gate. If there had been a light there this morning, I do not know whether the accident would have happened or not. I felt the dog of the cage with my foot; I could not see the cage. (Signed) John Brady.

Fleming, Kas., January 25, 1894.

Ralph Jones, of Fleming, Kas., first being duly sworn, testified as follows: Age, 40 years; occupation timberman; worked at mines about 30 years. Know the person whose body lies here dead to be that of Jasper Bosso. Have known him about one year. He was quiet, temperate, and peaceable. Last saw him alive Tuesday night, at bottom. First saw him dead this morning, when he was brought to the top. Joseph James told me to ask Carl Sparks why he was ringing the bell when the cage was going. I went out, and the first thing I heard was that a man had fallen in the shaft. Steam was flowing from top of shaft at that time. There was steam

enough, coming thick enough, around the mouth of the shaft so that a man could be mistaken as to whether the cage was at the landing or not. (Signed) Ralph Jones.

Witness: Joseph James.

Fees: Coroner, one day's attendance, \$3; summoning jury, \$1; one copy subpoena, 50 cents; six additional persons, 90 cents; administering oath to seven witnesses, 70 cents; 30 miles, at 10 cents per mile, \$3; transmitting papers, 25 cents; total, \$9.45. Clerk, G. E. Cole, \$2.

Jury: James Ferns, \$1; A. J. Nance, \$1; R. G. Jones, \$1; William Mackey, \$1; Henry Bath, \$1; W. R. Gray, \$1; total, \$6.

Witnesses: John Boyle, Ralph Jones, Carl Sparks, Joseph James, Thomas Willey, John Brady, Barney Hale, each \$1; total, \$7.

Constable, A. H. Halcom, summoning two juries, at \$1.50 each, \$3; seven miles, at 10 cents per mile, 70 cents; service on witnesses, \$1.75; two miles, 20 cents; total, \$5.65.

State of Kansas, Crawford County, ss.

An inquest holden at Fleming, Kas., in Crawford county, on the 25th day of January, A. D. 1894, before me, G. E. Cole, coroner of said county, on the body of Jasper Bosso, a person there lying dead, by the jurors whose names are hereto subscribed. The said jurors, upon their oath, do say: We, the jurors, find that Jasper Bosso came to his death by falling in shaft, Fleming No. 3, on the 25th day of January, 1894, and through the neglect of one Carl Sparks in opening the gate before the cage came to the landing.

In testimony whereof, the said jurors have hereunto set their hands the day and year aforesaid. (Signed) R. G. Jones, William Mackey, Henry Bath, A. J. Nance, James Ferns, W. R. Gray.

Attest: G. E. Cole, Coroner.

Accidents Nos. 4 and 5.—Fatal accidents to Robert Ratliff and H. Hantz, at the Pittsburg Gas Coal Company's mine, known as the Swan mine, on January 31, 1894:

About 4:30 p. m., on the above date, an explosion took place in said mine, when Robert Ratliff and H. Hantz were in mine firing shots. Both were severely burned about the face, body, and arms. They also received injuries as follows: Ratliff's skull was fractured and several bad cuts on head, and face and neck almost broiled. Hantz's skull was fractured, and head cut in many places; body, arms, face and neck badly burned also. Ratliff was a married man; Hantz was a single man. Both resided in Pittsburg. The following morning, February 1, I examined the mine, and it was with great difficulty that I got to the bottom, as the partition which divided the upcast and downcast was torn out in places, there being no second opening at this time. I found mine cars in cage seat broken to pieces. Found two cars on south side of bottom, with

wheels blown off and broken to pieces. In fact, everything was out of place, and the indications showed that a terrible cyclone must have traversed through the mine.

The question was, What caused the explosion? It could not have been an accumulation of gas, as miners worked in said mine the same day with naked lights. I found, upon examination, that the explosion originated at the face of what is supposed to be the back entry off the first east on north side. Two shots were fired in this place, which I am certain caused the explosion. The drill-hole on right-hand rib of room was six feet, and gripping very heavy at back. This shot blew the tamping. The drill-hole at face, on left-hand side of entry, was about five feet three inches in depth. This shot when fired basted about 15 inches of coal off front part of shot. About 3 feet 10 inches of this drill-hole, or shot, was in the solid. To the best of my opinion, this was the shot that caused the explosion. I sent for the miner who drilled and tamped both holes, and caused him to be brought into said place, to ascertain the amount of powder used as a "charge" commonly made up into a cartridge. The miner, Jack Scharard, who prepared those shots, said that the blast or shot prepared at face, near left-hand pillar, had only a little over two feet of powder, which, in my estimation, required at least $3\frac{1}{2}$ feet on the size cartridge-pin he used, being about $1\frac{1}{4}$ inches in diameter. The shot or drill-hole on right-hand pillar contained three feet of powder in cartridge, made on $1\frac{1}{4}$ -inch cartridge-pin, which would weigh about $3\frac{1}{4}$ pounds. The place where the explosion originated was about 53 feet ahead of the air or last break-through, and my opinion is that the first shot in blowing the tamping caused a concussion, also raising the coaldust, which was held in suspension, in addition to the amount of artificial gas, caused by the so-termed "gunner" or blow-out shot, and perhaps a certain per cent. of natural gas which may have accumulated. Consequently, the next shot, following soon after, ignited the coaldust, and perhaps the artificial and natural gas which may have been of itself below the point of ignition, until the flame, which no doubt ignited the coaldust, coming in contact with a brisk current of air at the break-through or cross-cut within 117 feet of the bottom of the downcast, encouraged the combination, which apparently became more violent until it reached the bottom of the downcast shaft, where Ratliff and Hantz were standing, hurling both violently against the pillar and into the cage seat, piling cars and other debris upon them, inflicting severe injuries in addition to the scorching they received, which proved fatal to both two days after.

I might state that I examined the entire working-places in said mine the following morning, after the explosion, and failed to find any indications of fire-damp. I ordered a second opening or air-shaft to be perfected in connection with this mine before resuming operation again, which was done after a great deal of hesitation on the part of the owner and lessee.

The entire distance from where the explosion originated to shaft bottom was 170 feet. This shaft suspended operation through litigation immediately after the air-shaft was sunk.

Accident No. 6.—Fatal accident to Prosper Stephens, at Wear Bros.' mine No. 2, Cherokee county, on February 7, 1894:

On the above date the deceased, Prosper Stephens, came to his death by firing a shot at the face of his working-place, viz., second west on north. The following is the testimony of Henry Dagnean: Said deceased came out of the mine about 8 a. m. to ask permission of the mine boss to fire his own shots. Came back with squibs, which the mine boss gave him about noon hour, and proceeded to fire the shot he had prepared. Henry Dagnean heard the report of the shot fired, and called to Stephens, but received no answer. Went into his place and found deceased lying unconscious on a pile of coal about 10 feet from the face. He was taken on top, and lived 10 hours, but never regained consciousness. It has been evidenced that the mine boss, Henry Helm, instructed several miners to fire their own shots, which is in direct violation of the general mining laws of the state. The object is, a saving to the company, and reducing the regular shot-firers' time and wages. Deceased was a native of Belgium, age 31 years, and married; leaves a wife and family. He could not understand the English language. The opinion is that Mr. Helm, the mine boss, is to blame for this man's death.

Accident No. 7.—Fatal accident to W. M. Henson, at Central Coal and Coke Company's mine No. 8, Cherokee county, on May 4, 1894:

In room No. 1, on third west on south, the deceased, Henson, a miner, was killed by a falling rock, which weighed about 45 tons. He was in the act of widening his room inside of a fault, generally termed a "horseback," when the rock fell without giving the least warning. I examined the location, and discovered two slips in the roof which would deceive the oldest experts in mining. Deceased was a married man, 38 years old; American by birth. Mr. Doan, the coroner, did not think it was necessary to hold an inquest.

To the State Inspector of Coal Mines, State of Kansas:

Report of D. Mackie, jr., employed as superintendent at Central Coal and Coke Company's colliery, at Weir City, county of Cherokee, and state of Kansas, in case of accident to William Henson, aged 38 years, employed as miner at No. 8 mine, owned by the Central Coal and Coke Company, which occurred on the 4th day of May, 1894:

We, the undersigned, have carefully examined the locality of said accident, and find that the injury consisted of a fall of 40 or more tons of rock, which was caused by his neglecting to leave coal under same when told by foreman, and the result was the fall of an unseen slip, which dropped without warning. To the best of our judgment, the injury was caused by the fall of a heavy rock which fell without warning, and the responsibility for said accident rests upon no one.

Made this 12th day of May, 1894.

J. W. Hooper, Stower.

J. W. Jenkins, Pit Boss.

Accident No. 8.—Fatal accident to Frank Bailey, at Central Coal and Coke Company's mine No. 4, Cherokee county, on May 7, 1894:

The deceased, F. Bailey, a practical miner, and a respected citizen of Scammon, Kas., was killed on the above date in room No. 2, first west on south. The indications showed that he was in the act of drilling a hole at face of room, when a piece of rock about six feet in length, two feet in width, and about seven inches in thickness, fell upon him. When found by one of his brother miners, he was then dead, the fallen rock or slate having broken his neck. I examined the room and surroundings where the deceased met his death. The roof was well propped and the roof at face solid.

The following is the verdict of the coroner's jury:

State of Kansas, Cherokee county, ss.

An inquisition holden at Scammon, in Cherokee county, Kansas, on the 7th day of May, A.D. 1894, before me, E. W. Doan, coroner of said county, on the body of Frank Bailey, then lying dead, by the jurors whose names are hereto subscribed. The said jurors, upon their oaths, do say that Frank Bailey came to his death by a heavy slate falling upon him. No carelessness seems to have been shown anywhere; plenty of props lying close to him. His death was purely accidental. The accident took place in the Central Coal and Coke Company's shaft No. 4, at Scammon, Kas., about 2 o'clock, May 7, 1894. In addition, we, the jurors, after examining the place of accident, find that it was well propped.

In testimony whereof, the said jurors have hereunto set their hands, the day and year aforesaid.

(Signed.)

Robert Gilmour.

John Wallace.

J. G. White.

John Collins.

J. G. Dunn.

Fred. Kempster.

Attest: This 7th day of May, A. D. 1894. E. W. Doan,
Coroner Cherokee County.

To the State Inspector of Coal Mines, State of Kansas:

Report of David Mackie, jr., employed as superintendent at Central Coal and Coke Company's colliery, at Scammon, county of Cherokee, and state of Kansas, in case of accident to Frank Bailey, aged 57 years, employed as miner at No. 4 mine, owned by the Central Coal and Coke Company, which occurred on the 7th day of May, 1894:

I, the undersigned, have carefully examined the locality of said accident, and find that the injury consisted of being crushed to death, which was caused by a fall of slate. R. S. Mahan, M. D.

To the best of our judgment, the injury was unavoidable, and the responsibility for said accident rests upon no one.

Made this 11th day of May, 1894.

(Signed.) James A. Rafter, Weighman.
Bernard Sweeney, Pit Boss.

Accident No. 9.—Fatal accident to Guy Haney, at Kansas and Texas Coal Company's mine No. 18, Cherokee county, on May 21, 1894:

Guy Haney, a mule driver and shot-firer, was shot or suffocated on the night of the above date while in the act of going back on a supposed miss-shot in second south on eighth west on south. The indications showed that he was crawling over a shot of brushing, when the coal shot at the face went off and the coal struck him, as marks on his head and body indicated, either killing him or rendering him unconscious at the time. However, the general supposition is, and the examining physician said, that the cuts and marks on his body caused by the coal shot did not kill him instantly, but may have stupefied him, and by so doing the deceased lay there in the smoke which hastened his death. This is evidence enough that shot-firers should not go alone. They have been requested on many occasions to go in pairs. I have endeavored to put a stop to the practice of having men who work in the mine all day fire shots at night, as they are always in too much of a hurry and anxious to get through, and I have often requested the mine operators or those in charge to discontinue the practice. The shot-firing law is so complicated that a doubt exists as to whether anyone can fire shots except the regular shot-firers who are hired for that special purpose. Nevertheless, it is a law that should be respected by both employer and employe, as I consider it a direct benefit to both. The deceased, Guy Haney, was 21 years of age; unmarried; an American by birth; bore a good reputation, and was highly respected by all who knew

him. The following-named persons (all miners) were examined as witnesses, and concur in the foregoing statement: William Young, Eugene Frisbie, Herman Frisbie, and James Duffey.

Accident No. 10.—Fatal accident to James Stoker, at Central Coal and Coke Company's mine No. 7, Cherokee county, on May 22, 1894:

James Stoker, employed as a miner in said mine on the above date, received injuries that proved fatal. He was in the act of wedging down some coal, when unexpectedly roof slate fell upon him, breaking his back. He lingered in great agony until relieved by the angel of death, on June 24. He was an old resident of Scammon. He became converted to the Catholic church, was baptized according to the Catholic doctrine, and selected his last resting-place in the Catholic cemetery, in Scammon, before he died. He was 38 years of age; married; an American by birth.

Accident No. 11.—Fatal accident to M. T. Nicewarner, at Durkee Coal Company's mine No. 4, Cherokee county, May 26, 1894:

On the morning of said date, about 11 o'clock, M. T. Nicewarner, a miner, received injuries at the face of his room or working-place which resulted in death about one-half hour later. The deceased was in the act of mining, when a rock about eight feet in length, four feet in width, and about 17 inches in thickness, fell upon him in room No. 7 in first east on north side of mine. A colored miner, named Garret, was stowing dirt near by, and heard the rock fall. He came to his relief immediately, and rendered all the assistance possible, which was of no avail, as he was almost breathing his last then. I was notified by Mr. Joseph Humble, superintendent, on the evening of said accident. I went the following morning, Sunday, May 27, and inspected the place wherein the deceased worked at the time the accident occurred. Mr. Humble, the superintendent, and the mine boss accompanied me. The mine boss stated that he examined the place wherein the deceased worked the day previous (Friday), and instructed the deceased to set some posts or props under the rock which caused his death. It was then and there that the mine boss negligently overlooked his duty. He (the boss) should have caused the rock to be taken down or securely propped immediately, knowing that it was dangerous at that time. However, the mine boss informed me that the shot-firers told him that the rock in said room was securely propped the night previous, when they (the shot-firers) were in said room firing shots. The opinion

is that the coal shots fired the night previous knocked out the props that were securing the rock from falling, and when the deceased went into the room the following morning he either neglected to reset props through carelessness or oversight until it was too late. In my opinion, 60 per cent. of all accidents in this district are due to the fact that inexperienced men are hired to work in the mines, and who have little, if any, knowledge of their dangerous surroundings. This course has been practiced by many of the operators to a large extent since the suspension of 1893. In section 21 of the general mining laws of Kansas the mining boss will find the law governing his duty, which is unscrupulously overlooked, as they spend over 95 per cent. of their time when at the mine either in the engine-room or blacksmith shop, instead of attending to their duty in the mine. The deceased, Nicewarner, was a resident of Cherokee, Crawford county; aged 17 years; an American by birth.

I made another visit to the room wherein Nicewarner was killed on August 14, and will state that three props were lying in the room at my first and second visits. Whether they were in the room at the time the accident occurred or not, I cannot say. I am at a loss to know whether the deceased or the mine boss was to blame in this case. It was the duty of the mine boss to cause props to be brought into the place and the roof made secure.

Accident No. 12.—Fatal accident to George Wilkinson, at Hamilton & Braidwood's mine No. 1, Cherokee county, on June 19, 1894:

George Wilkinson, an old miner, and well known in Weir City, dropped dead at bottom of shaft as he was preparing to ascend on the above date. No reason assigned except heart failure.

Accident No. 13.—Fatal accident to F. Saunders, at Western Coal and Mining Company's mine No. 5, Yale, Crawford county, June 30, 1894:

Frank Saunders met his death, according to the following statement made by John Russell, superintendent, which reads as follows: To the State Inspector of Coal Mines:

Report of accident to Frank Saunders, employed running empty cars at the chute at No. 5 mine, at Yale, county of Crawford, and state of Kansas, in case of accident to Frank Saunders, employed as above stated at No. 5 mine, owned by the Western Coal and Mining Company, on the 30th day of June, 1894, between 10 and 10:30 a. m.:

I, the undersigned, have carefully examined the locality of said accident, and find that the injury consisted of the said Frank Saun-

ders having his body crushed just above the hips, injuring him internally and injuring his spine, from the effects of which he died about 1 p. m., on the above date. The injury was caused by his being caught between a loaded and an empty car while changing the cars under the chute. He was running the empty car in to bump the load out, and saw that he had left his shovel on the rail. He ran between the cars and knocked the shovel off, and then stepped back, and was caught between the cars with the above result.

To the best of my judgment the injury was the result of the deceased being careless in letting his mind off his work, and stepping back in the way of the car he was running in, and the responsibility for said accident rests upon the deceased, and no blame can be attached to anyone else as there was no one else helping with the cars. Deceased leaves a wife and four children.

Made this 2d day of July, 1894.

John Russell.

Accident No. 14.—Fatal accident to Tony Bukato, at Kansas and Texas Coal Company's mine No. 34 (Riverside), Leavenworth county, on July 14, 1894:

The following is the statement of Thomas Graham, mine boss, mine No. 3, Leavenworth county:

To the State Inspector of Coal Mines:

Report of Thomas Graham, employed as pit boss at Riverside mine, at Leavenworth, county of Leavenworth, and state of Kansas, in case of accident to Tony Bukato, employed as dumper at No. 34 mine, owned by the Kansas and Texas Coal Company, on the 14th day of July, 1894:

We, the undersigned, have carefully examined the locality of said accident, and find that the injury consisted of having the top of his head cut off, resulting in instant death, which was caused by being struck by the top of the cage while in the act of placing a note to the bottom cager on the cage, and that he was perfectly familiar with the work, having often done it before.

To the best of our judgment the injury was entirely accidental, and the responsibility for said accident rests upon the injured man, and that the Kansas and Texas Coal Company nor any of its employees were in any manner responsible for the accident.

Made this 16th day of July, 1894.

Thomas Graham.

John Smith.

Thomas Oliver.

Mike Brown.

Accident No. 15.—Fatal accident to Felix Anderline, at Cherokee and Pittsburg Coal and Mining Company's mine No. 1, Frontenac, Crawford county, on August 25, 1894:

The deceased, Felix Anderline, a miner, was instantly killed between the hours of 6 and 7 o'clock, on the evening of said date, in room No. 21 on sixth west in first north on west side of said mine.

The deceased and Joseph Enrico were working together in said room. They prepared and charged five shots, which in all cases are against the rules and regulations of shot-firing in any one room or entry. Instead of leaving the mine at the regular hour, viz., 5 p. m., they remained in their places until the shot-firers came along, and requested the shot-firers to fire the five shots they had prepared. The shot-firer, Frank Waverly, through good judgment and wisdom, refused to fire more than three shots in any one place, particularly in this place, which had been widened inside of a clay vein or horseback, as very little air circulated owing to no breakthrough being made inside of the horseback. After the shot-firers had gone, the men procured squibs somewhere, and proceeded to fire the two shots which the shot-firers had refused to fire. The supposition is, that Anderline, after lighting both shots could not find his way out of the room before the shots went off owing to the smoke of the three previous shots fired in the same room a short time previous. However, he was killed instantly. I examined the room the following morning (Sunday), accompanied by the shot-firer and the mine boss, Ed. Flinn. After a careful investigation, we were of the opinion that the fault rested on the deceased and his partner, Joseph Enrico, as they disobeyed all laws, rules, and regulations pertaining to the shot-firing law of the state of Kansas. This may prove a valuable lesson to many of those who claim they do not understand the English language. Mr. Wilson notified the coroner, who claimed that it was not necessary to hold an inquest. Deceased was 32 years old, a native of Italy. Only came to this country a short time ago.

To the State Inspector of Coal Mines:

Report of Alex. Quinet and Peter Fisher, employed as drivers at No. 1 mine, at Frontenac, county of Crawford, and state of Kansas, in case of accident to Felix Anderline, employed as a miner at No. 1 mine, owned by the Cherokee and Pittsburg Coal and Mining Company, on the 25th day of August, 1894:

We, the undersigned, have carefully examined the locality of said accident, and find that the death of Felix Anderline was caused by his trying to fire his own shot before all those previously lit by regular shot-firers had exploded; he being caught in his room just as one of the shots exploded, which broke his neck and leg and resulted in instant death.

To the best of our judgment the injury was his own carelessness, and the responsibility for said accident rests upon himself.

Made this 3d day of September, 1894.

(Signed) Alex. Quinet, Peter Fisher.

Witness: C. Zabiske.

Accident No. 16.—Fatal accident to Salis Whiterd, at Kansas and Texas Coal Company's mine No. 20, Crawford county, August 30, 1894:

On the above date Salis Whiterd, a miner employed at said mine in room No. 3 on seventh east on south side, was instantly killed by a fall of rock. He was in the act of mining a standing shot, when the rock fell upon him, which was about 6 feet in length and about $2\frac{1}{2}$ feet in width, striking him on the head and crushing it into a jelly. I was notified immediately after the accident, and went into the place where deceased was killed and examined the room. There were props and cap pieces in his room. I was informed that he was unexperienced in mining, and had only mined coal about six weeks. Deceased was married, and leaves a wife and children.

Accident No. 17.—Fatal accident to Con Reirdon, at the John Denchy strip mine, near Fuller, Crawford county, September 5, 1894:

The deceased, Con Reirdon, was in the act of lighting a squib when the shot went off, killing him instantly. Mr. Reirdon lived in Pittsburg, and was respected by all who knew him. He left a wife, but no family.

Accident No. 18.—Fatal accident to William Lyons, at Central Coal and Coke Company's mine No. 7, Cherokee county, on September 26, 1894:

On the above date William Lyons, employed as a miner in said mine, received injuries which proved fatal. He was in the act of wedging down a standing shot of coal, when unexpectedly a piece of rock or slate fell upon him, which dislocated his back. From the time of the accident until he died, he had no use or power of his legs. He was taken to St. Joseph's hospital, Kansas City, Mo., but the care and science of human skill failed to relieve his sufferings, until the angel of death called him to his heavenly home on Tuesday morning, October 23. His brothers and sisters brought his body to Scammon, where he was interred in the Catholic cemetery. The deceased, William Lyons, was an exemplary young man, beloved and respected by all who knew him for his modest, inoffensive, industrious and sober habits, which were noticeable by every person whose acquaintance he formed. He was an American by birth, aged 24 years.

Accident No. 19.—Fatal accident to Nicholas Cresson, at Hamilton & Grant mine No. 1, Crawford county, on October 19, 1894:

William Hamilton, jr., testified that he was in the engine-room, and that the regular signal for hoisting men was given from the bottom, viz., three bells. Accordingly, he proceeded to hoist the

cage a few seconds after the signal was given from the bottom. The steam boiler at this time only indicated 15 pounds of steam, and Mr. Hamilton claims he detected something had caught which prevented the ascension of the cage in the shaft. Consequently, he stopped the cage when within a few feet of the top landing, and immediately after discovered Nicholas Cresson, the deceased, stretched across the west cage, with his feet towards the east and his head caught between the west side of cage and the buntins which divide the two compartments in the shaft. I was notified by telegram, and went to the shaft immediately, examined the surroundings, and made inquiry as to the true facts in the case. I also examined the shaft, accompanied by Mr. Smith and Mr. William Norman, two experienced and practical miners. We measured the shaft. The depth from cage seat to first landing was 40 feet 4 inches. About 17 feet 2 inches from the bottom we discovered blood marks on the under side of a buntin, showing quite visible, six inches in length. It was, in our opinion, at this point where he received his death blow, as the left side of his head was split open about six inches in length. On each buntin, as the cage ascended, blood was splattered. Our opinion is that the deceased, Nicholas Cresson, rang three bells as a signal to the engineer. There being no back signal from the engine-room to the bottom at that time, he (Cresson) did not expect to have the cage raised immediately after ringing, and our opinion is that when the cage was raised from the bottom he stepped on to it in a hurry. Our opinion is that in raising the cage, it may have been done suddenly, as the hoisting power is a single engine, consequently he, the deceased, was jerked off his balance, perhaps, falling on the cage, and before he had time to recover, his head came in contact with the aforesaid buntin, which caused immediate death. There was no evidence could be given in this case except that of William Hamilton, as he was the only man around the top or engine-room at that time, and the deceased was the only one at the shaft bottom when the cage was hoisted. Mr. Hamilton claims the accident is a mystery, and were he to blame no doubt he would not criminate himself. Deceased was a married man, aged 49 years. A native of France.

Accident No. 20.—Fatal accident to Geo. Howell, October 24, 1894.

I was not notified of this accident. The following has been clipped from the Pittsburg "Headlight":

"George Howell lost his life in a coal mine near Ransomville. Mr. Howell was working in the mine when a cave-in occurred, killing

him almost instantly. He was well known and highly respected in this city, and leaves a wife and children."

Accident No. 21.—Fatal accident to G. W. Jones, at Central Coal and Coke Company's mine No. 8, Cherokee county, on October 24, 1894:

About 8 p. m., on said date, the deceased, G. W. Jones went towards the shaft to procure a bucket of coal. Fumbling around in the dark he fell into the shaft, and went to the bottom, a distance of 75 feet. Immediately after a colored miner named J. H. Steward, heard him calling for help. He (Steward) and another colored miner went down the stairway in the escapement shaft and found Jones lying in the cage seat at the bottom. He was taken on top, and lived until the following morning. The night watchman claimed the gates at the top of the shaft were closed. This could not have been the case, otherwise he could not have stepped into the shaft. Jones was one of the colored miners brought from Alabama during the unpleasantness of 1893.

Accident No. 22.—Fatal accident to James Cavender, at the Zable drift mine, $3\frac{1}{2}$ miles south of Quenemo, on October 25, 1894:

While in the act of mining, his room caved in, killing him instantly.

Accident No. 23.—Fatal accident to Emiel Myers, at Carbon Coal Company's mine No. 10, Osage county, on December 14, 1894:

This accident cannot be directly attributed to mining, nevertheless it happened at or near the mine. Young Emiel Myers was a bright little fellow, about $5\frac{1}{2}$ years old. He was playing near the aforesaid shaft mine, and was caught between railroad cars on the switch. His head being crushed until blood flowed from his mouth, nose, and ears. He died at 5 p. m., on the above date.

Accident No. 24.—Fatal accident to Guy Wilkins, at the Thomas Whitcomb mine, Osage county, on December 24, 1894:

The deceased, Guy Wilkins, it is supposed was attaching a water-box to the cage, when he fell down the shaft, a distance of 110 feet. There was no one present at the time the accident occurred. There is no blame attached to anyone except deceased. Wilkins was 25 years old, and left a wife and family.

Accident No. 25.—Fatal accident to James Turner, at Central Coal and Coke Company's mine No. 7, Cherokee county:

James Turner met an untimely death at the powder magazine near said mine. He used a steel file in opening a 25-pound keg of powder, which sent him to eternity in a few seconds. I have not been informed of date of accident.

Accident No. 26.—Fatal accident to James Snodgrass, at Hamilton & Braidwood Coal Company's mine No. 1:

The deceased, Snodgrass, was employed as a car-trimmer. He was caught between the railroad cars on a switch near mine. No date given.

NON-FATAL ACCIDENTS.

The number of non-fatal accidents for the year ending December 31, 1894, was 53. The mine operators or their officials do not notify the Mine Inspector of one-half of the non-fatal accidents, which is their duty according to law. In my opinion, the fault is due to the mine boss, who endeavors to conceal all accidents that may have a tendency to reflect any discredit on him (the boss) for negligence or inattentiveness to duty.

The counties in which non-fatal accidents have occurred are as follows: Crawford county 21, Cherokee county 15, Osage county 14, Linn county 3; total 53.

The causes were as follows: Falls of roof 23, going back on supposed missed shots 5, explosion in mine, supposed to have been caused by coaldust 4, falls of coal 4, caught by mine cars 4, caught by railroad cars on switch near mine 2, coal falling down shaft 2, caught by cage 2, powder explosion 2, falling off ladder in air-shaft 1, struck by prop 1, struck by timber falling down shaft 1, falling off cage 1, drilling out missed shot 1; total 53.

Record of Non-Fatal Accidents for 1894.

No. 1, January 3, 1894.—Charles Jenkins, employed as a day hand in Wear Coal Company's mine No. 5, Crawford county, was hurt by fall of rock on main entry, and right foot fractured.

No. 2, January 10.—John Lydeat, a shot-firer, employed at Wear Bros.' mine, Cherokee county, was severely burned, on the above date, by an explosion of coaldust immediately following shot or blast.

No. 3, January 16.—G. Johnston, a colored miner, employed in Durkee Coal Company's mine No. 4, Crawford county, was badly burned, on the above date, by flame of a shot that he did not go far enough away from.

No. 4, January 22.—George Hammond, a miner employed at Kansas and Texas Coal Company's mine No. 20, Crawford county: Cut on head by falling of timber in shaft.

No. 5, January 29.—Andrew Jolly, employed as a miner at Columbus Coal Company's mine, Cherokee county, on the above date: Leg broken by a fall of coal.

No. 6, February 7.—Fornes Denere, employed as a miner at Durkee Coal Company's mine No. 1, Cherokee county: Injured by a fall of slate.

No. 7, February 13.—Isaac Hibbs, employed at Carbon Coal Company's mine No 23, Osage county: Received severe bodily injuries by going back on a supposed missed shot.

No. 8, February 17.—J. Chambers, employed as a miner at Carbon Coal Company's mine No. 12, Osage county: Injured by a fall of soapstone.

No. 9, February 22.—Samuel Patterson, employed as a miner at Carbon Coal Company's mine No. 12, Osage county: Injured by a fall of soapstone.

No. 10, February 28.—William Stanlick, employed as a mule driver at Wear Coal Company's mine No. 2, Crawford county: Caught between cars and side of entry, which fractured his ribs and bruised him about the shoulders and body.

No. 11, March 2.—William Washington, a miner employed in Midway Coal Company's mine No. 4: Injured badly by a fall of slate.

No. 12, March 2.—Frank Norris, employed as a shot-firer at Cherokee and Pittsburg Coal Company's mine, Frontenac, Crawford county: Badly injured going back on supposed missed shot, which exploded when he was near said shot or blast.

No. 13, March 5.—Fred. Croucher, employed as a miner at Carbon Coal Company's mine No. 20, Osage county: Injured by a fall of soapstone.

No. 14, March 7.—Dan. Griffin, a shot-firer, was overcome by the after-damp of an explosion, which originated in first east on north side of Central Coal and Coke Company's mine No. 7, Cherokee county. Said explosion is supposed to have been caused by coal-dust. Careful treatment restored him to life in about three hours

after the explosion, though he was pronounced dead when found in mine.

No. 15, March 23.—Ben. Carpenter and John Lewis, two shot-firers employed at Midway Coal Company's mine No. 4, while sitting in the entry waiting for a shot to go off, were burned by the explosion of coaldust which ignited immediately after the shot exploded. Both men were thrown to the ground in a violent manner. Their hands and face were badly burned, and they had a narrow escape from death.

No. 16, March 28.—Harry Ensworth, a miner employed at Central Coal and Coke Company's mine No. 6, Cherokee county, was in the act of drilling out a missed shot when he ignited the powder in a manner he could not explain. It was supposed he struck a sulphur by the careless handling of his drill or scraper. The shot exploded within close range, burning his face, head, arms, and body. No one can account for his escape from death, unless by the intervention of Divine Providence.

No. 17, March 28.—Steve Dorey, a miner employed at Cherokee and Pittsburg Coal and Mining Company's mine No. 4, Chicopee, Crawford county: Severely injured on back by a fall of slate while in the act of setting props.

No. 18 and 19, April 6.—John Harris and Alex. Wood (colored), two shot-firers employed at Central Coal and Coke Company's mine No. 6, Cherokee county: Badly burned when in the act of firing shots. Dry coaldust is supposed to have been the principal cause.

No. 20, April 6.—James Linn, a mule driver employed at Western Coal and Mining Company's mine No. 3, Fleming, Crawford county, was caught by cage when in the act of passing from one side of the shaft to the other. Injuries consist of dislocated hip and cut on head.

No. 21, April 10.—John Jones, employed as a miner at Carbon Coal Company's mine No. 22, Osage county: Severely injured by a fall of soapstone.

No. 22, April 27.—William Humble, employed as a cager at Durkee Coal Company's mine No. 1, Cherokee county: Badly injured by coal falling from top landing to bottom of shaft.

No. 23, April 28.—L. B. Rice, employed as a miner at Thomas Martin's mine, Osage county: Injured by fall of soapstone.

No. 24, May 7.—Elmer Rowe, employed as a mule driver at Wear Coal Company's mine No. 5, Crawford county: Finger cut off by mine car.

No. 25, May 7.—Thomas Barrett, sr., employed as a miner at Kan-

sas and Texas Coal Company's mine No. 18, Cherokee county: Foot injured by a fall of slate.

No. 26, May 15.—Antonia Persbitrio, a miner employed at Carbon Coal Company's mine No. 25, Osage county: When firing shot, held his lamp to gas squib until shot exploded. He was burned about face and body, also badly cut on head, face, and breast.

No. 27, May 16.—Mease Pearson (colored), employed as car-trimmer at Central Coal and Coke Company's mine No. 8, Cherokee county: Caught between railroad cars on switch.

No. 28, May 17.—Clint Morris was severely burned in Arnott & Lanyon's shaft mine, Crawford county, on the above date, by going back on a supposed missed shot. He also suffered from a concussion of the brain, in addition to several bad cuts on head, caused by coal off-shot.

No. 29, June 13.—Hugh Ferguson, a practical miner, had his left foot broken below the ankle, on the above date, while employed at Cherokee and Pittsburg Coal Company's mine No. 1, Frontenac, Crawford county, caused by a falling prop.

No. 30, July 16.—Tom Barrett, jr., broke a leg by falling off ladder in air-shaft at mine No. 18, Kansas and Texas Coal Company, Cherokee county.

No. 31, July 24.—Ed. Gustafson, a practical miner employed at the Carbon Coal Company's mine No. 12, Osage county, had his leg broken. Caused by a fall of rock.

No. 32, July 26.—M. Ramsey, a practical miner employed by the Carbon Coal Company, at mine No. 27, Osage county, had his thumb mashed, caused by a fall of coal.

No. 33, August 2.—Thomas Patten, employed by the Cherokee and Pittsburg Coal and Mining Company, Crawford county, as top hand, was severely bruised about the back and shoulders, caused by falling off railroad cars in yard.

No. 34, August 3.—Charles Dobson, a practical miner, had his leg and back bruised, on above date, while employed at Kansas and Texas Coal Company's mine No. 18, Cherokee county, caused by a falling rock.

No. 35, August 18.—Thomas Willey, a miner, had his left hip dislocated, and cut on left side of face, on above date, while employed in Western Coal and Mining Company's mine No. 3, Crawford county, caused by a fall of rock. Mr. Willey is crippled for life; cannot move except by aid of crutches.

No. 36, August 23.—Felix Rice, a driver, had his foot fractured,

on the above date, while employed by the Bradley & Vernon Coal Company, Linn county. Cause, caught between pit cars.

No. 37, August 31.—Hugh Friel, a practical miner, had his fingers mashed, on above date, while employed at the Cherokee and Pittsburg Coal and Mining Company's mine No. 4, Chicopee, Crawford county, caused by a fall of coal.

No. 38, September 7.—John Falladh, a miner, was injured in the J. Hersey mine, Osage county, caused by a fall of rock.

No. 39, September 28.—David Eggbery, a practical miner, received injuries while mining off a standing shot, on the above date, while in the employ of Central Coal and Coke Company's mine No. 9, Nelson, Crawford county, caused by a fall of coal.

No. 40, October 15.—Frank West, a miner, received severe bodily injuries, on above date, while employed by the Mine Creek Coal Company's mine No. 1, Linn county, caused by falling off cage.

No. 41, October 19.—Gilbert Turner, a practical miner, was severely injured, on above date, while employed at Weir Coal Company's mine No. 2, Crawford county, caused by coal falling down shaft.

No. 42, November 19.—Walter Smith received injuries while employed in the Hoggins mine, Osage county. Cause, caught by pit car.

No. 43, December 1.—August Bastrom, a miner, received injuries on the above date, while employed at Carbon Coal Company's mine No. 12, Osage county, caused by fall of roof.

No. 44, December 1.—Thomas Mooney, a regular shot-firer, employed at Cherokee and Pittsburg Coal Company's mine No. 4, Chicopee, Crawford county, was seriously injured while in the discharge of his duties, in room No. 24 on tenth east on south. As he was in the act of going back on a supposed missed shot, the blast went off when he was within 20 feet of the shot, the coal striking him on the face and body, also on the head, fracturing his skull. Drs. Graves and Prichard, of Cherokee, removed two large pieces of his skull bone. In fact, he was mangled almost beyond recognition. He was in an unconscious state for about three weeks. Were it not for the interest manifested by Mr. Purtle, the mine boss, Mr. Mooney would undoubtedly have breathed his last in said room. Irrespective of the injuries received, he must have inhaled sufficient powder smoke to have killed an ordinary man. By careful treatment in the St. Margaret hospital he recovered, but will never be capable of performing any laborious work in mines again.

No. 45, December 31.—Michael Fahey, a practical miner, had his

collar bone broken while employed at the John Hersey mine, Osage county, caused by a fall of rock.

The following non-fatal accidents are reported, but no dates given:

No. 46.—Isaac Griffith was injured while in the employ of the Kansas Shaft Mine Company, Cornell, Crawford county, caused by a fall of slate.

No. 47.—D. I. Roberts, a practical miner, was injured while employed at Weir Coal Company's mine No. 5, Crawford county, caused by a fall of roof.

No. 48.—Thomas Sumon, shot-firer, was severely injured while employed at Kansas and Texas Coal Company's mine No. 18, Cherokee county, caused by going back on supposed missed shot.

No. 49.—William M. Fox, a practical miner, was injured while employed at Kansas and Texas Coal Company's mine No. 18, Cherokee county, caused by slate.

No. 50.—F. C. Srudige, employed at Kansas and Texas Coal Company's mine No. 18, Cherokee county: Caught by cage.

No. 51.—P. Garrett, a miner, employed at the W.J. Thirwell mine, Pleasanton, Linn county. Cause, fall of slate.

No. 52.—Robert Dawson, employed as a miner at the Harry Isaac mine, Osage county. Cause, fall of soapstone.

No. 53.—M. Maceria was injured by a fall of rock at Central Coal and Coke Company's mine. No date given.

INSPECTION OF STEAM BOILERS FOR THE YEAR 1894.

Section 19 of the general mining laws reads as follows:

"Every steam boiler used in or around the coal mines of this state shall be provided with a proper steam guage and water guage, to show respectively the pressure of steam and the height of water in the boiler, and to be also provided with a proper safety valve; and the owner, agent or operator shall have the said boiler or boilers examined and inspected by a competent boilermaker, or other qualified person, once in every six months, and the result of every examination shall be certified in writing, and conveyed to the Mine Inspector, to be filed in the records of his office."

The following coal companies reported the steam boilers in use at their shaft mines in good condition, in compliance with the afore-said section:

Crawford County.

1. Western Coal and Mining Company reported steam boilers at mines Nos. 2, 3, 4, 5 and 6 in good condition.

2. Pittsburg and Midway Coal Company reported steam boilers at mine No. 4 in good condition.

3. Kansas Shaft Coal and Mining Company reported steam boilers in good condition.

4. Kansas and Texas Coal Company reported steam boilers at mines Nos. 20, 22 and 37 in good condition.

5. Arnott & Lanyon Coal Company reported steam boilers at their mine in good condition.

6. Fuller Coal Company reported steam boilers at their mine in good condition.

7. Central Coal and Coke Company reported steam boilers at mine No. 9 in good condition.

8. The Cherokee and Pittsburg Coal and Mining Company reported steam boilers at mines Nos. 1, 2 and 4 in good condition.

9. The Wear Coal Company reported steam boilers at mines Nos. 2 and 5 in good condition.

10. Hamilton & Grant reported steam boilers at mine in good condition.

11. Durkee Coal Company reported steam boilers at mine No. 4 in good condition.

Cherokee County.

12. The Kansas and Texas Coal Company reported steam boilers at mines Nos. 18 and 47 in good condition.

13. The Hamilton & Braidwood Coal Company reported steam boilers at mines Nos. 1 and 2 in good condition.

14. The Weir Coal Company reported steam boilers at mines Nos. 5 and 7 in good condition.

15. The Wear Bros. reported steam boilers at mine No. 2 in good condition.

16. The Central Coal and Coke Company reported steam boilers at mines Nos. 4, 5, 6, 7 and 8 in good condition.

17. The Durkee Coal Company reported steam boilers at mines Nos. 1, 2 and 3 in good condition.

18. The Columbus Coal Company reported steam boilers at mine No. 1 in good condition.

19. The Central Coal Company and the Scammon Coal Company failed to report.

Leavenworth County.

20. The Leavenworth Coal Company reported steam boilers at mine in good condition.

21. The Home Mining Company reported steam boiler at mine in good condition.

22. The Kansas and Texas Coal Company reported steam boilers at mine No. 34 in good condition.

23. The superintendent at the state mine, or penitentiary shaft, failed to report.

Linn County.

24. The Mine Creek Coal Company reported steam boilers at mine No. 1 in good condition.

25. W. J. Thirwell reported steam boiler at mine No. 1 in good condition.

26. The Bradley & Vernon Coal Company reported steam boilers at mine No. 1 in good condition.

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TENTH ANNUAL REPORT

OF THE

INSPECTOR OF COAL-MINES,

STATE OF KANSAS,

FOR THE

YEAR ENDING DECEMBER 31, 1897.



TOPEKA, KANSAS:
1898.

TENTH ANNUAL REPORT

OF THE

INSPECTOR OF COAL-MINES,

STATE OF KANSAS,

FOR THE

YEAR ENDING DECEMBER 31, 1897.



TOPEKA, KANSAS:

1898.



LETTER OF TRANSMITTAL.

WEIR CITY, KAN., February 1, 1898.

Hon. J. W. Leedy, Governor:

SIR — Herewith, in compliance with section 18, chapter 149, General Statutes of 1897, relating to mines and mining, I hand you the Tenth Annual Report of the State Coal-Mine Inspector, for the year ending December 31, 1897. Very respectfully,

GEO. T. McGRATH, *Inspector.*

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1897

INTRODUCTION.

DURING the year 1897, 8,494 men and 205 boys, employed in and around the coal-mines of Kansas, produced 3,291,806 tons of coal, valued at the mine at \$3,488,380.71. This indicates an increase of the production of coal in Kansas over the years 1895 and 1896; in fact, this is the largest production of coal, except the year 1894, when the big strike was on in the East, that ever was produced in this state. The average selling price of coal at the mine is an increase of six cents per ton over 1896. A glance over the summary and wage table will show some very convincing facts, in connection with the miners and mine laborers of Kansas, as to the number of days worked and amount of wages earned during that time, and the average wages per miner and laborer for 310 days during the year in each county; it also shows the production of coal by counties, the value of all the mines as returned by the companies, the amount of powder used, the total amount of wages earned by all miners in the state and all underground day men and all over-ground day men, and much other matter of interest.

It will also be seen by the number of days the miners and mine laborers worked during the year that their wages are far too low to properly clothe and educate their children; not only is this true, but another fact, the more difficult it becomes for him to earn a livelihood and feed those dependent upon him, the more suspicious and jealous of his fellow workman he becomes, and as a result, in many instances, one man will take advantage of his fellow workman to increase his earnings, which gradually works injury to all. In addition, this report contains all the valuable information that the Mine Inspector was able to gather in connection with the mines, and it is so compiled as to make it as plain as it was possible to do; and one more very important fact, and one that is very gratifying to the Inspector, is the large percentage of decrease in fatal and non-fatal accidents as compared with other years and the number of employees and amount of coal produced. Also, some recommendations that I hope will not be overlooked.

PRODUCTION OF COAL BY COUNTIES.

<i>Counties.</i>	<i>Short tons.</i>	<i>Per cent.</i>
Crawford	1,590,620	48.32
Cherokee	1,061,409	32.24
Leavenworth	367,141	11.84
Osage.....	181,857	5.52
Brown	2,300	.07
Chautauqua	1,200	.03
Labette.....	2,000	.06
Republic.....	1,300	.04
Bourbon	28,483	.86
Lincoln	750	.02
Shawnee	804	.02
Franklin	6,452	.11
Lyon	835	.02
Ellsworth.....	1,427	.04
Elk.....	320	+
Russell	181	+
Atchison	5,152	.15
Linn	26,775	.81
Cloud.....	2,800	.08
Coffey.....	10,000	.30
Total.....	3,291,806	

IMPORTS AND EXPORTS.

The following tables have been compiled from official returns to the bureau of statistics of the treasury department, and show the imports and exports of coal from 1867 to 1896, inclusive. The values given in both cases are considerably higher than the average "spot" rates by which the values of the domestic production have been computed.

The tariff from 1824 to 1843 was 6 cents per bushel, or \$1.68 per long ton; from 1843 to 1846, \$1.75 per ton; 1846 to 1857, 30 per cent. ad valorem; 1857 to 1861, 24 per cent. ad valorem; 1861, bituminous and shale, \$1 per ton; all other, 50 cents per ton; 1862 to 1864, bituminous and shale, \$1.10 per ton; all other, 60 cents per ton; 1864 to 1872, bituminous and shale, \$1.25 per ton; all other, 40 cents per ton. By the act of 1872 the tariff on bituminous coal and shale was made 75 cents per ton, and so continued until the act of August, 1894, changed it to 40 cents per ton. On slack or culm the tariff was made 40 cents per ton by the act of 1872, was changed to 30 cents per ton by the act of March, 1883, and so continued until the act of August 1894, changed it to 15 cents per ton. Anthracite coal has been free of duty since 1870. During the period from June, 1854, to March 1866, the reciprocity treaty was in force, and coal from the British possessions in North America was admitted into the United States duty free.

The exports consist both of anthracite and bituminous coal, the amount of bituminous being the greater in the last few years. They are made principally by rail over the international bridges and by lake and sea to the Canadian provinces. Exports are also made by sea to the West Indies, to Central and South America, and elsewhere.

The imports are principally from Australia and British Columbia to San Francisco, from Great Britain to the Atlantic and Pacific coasts, and from Nova Scotia to Atlantic coast points.

MINERAL RESOURCES.

Coal imported and entered for consumption in the United States, 1867 to 1896.

YEAR ENDING —	Anthracite.		Bituminous and shale.	
	Long tons.	Value.	Long tons.	Value.
June 30, 1867.....			509,802	\$1,412,597
1868.....			394,021	1,250,513
1869.....			437,228	1,222,119
1870.....			415,729	1,103,965
1871.....	973	\$4,177	430,508	1,121,914
1872.....	390	1,322	485,063	1,279,686
1873.....	2,221	10,764	460,028	1,548,208
1874.....	471	3,224	492,063	1,937,274
1875.....	138	963	436,714	1,791,601
1876.....	1,428	8,560	400,632	1,592,846
1877.....	630	2,220	495,816	1,782,941
1878.....	158	518	572,846	1,929,660
1879.....	488	721	486,501	1,716,209
1880.....	8	40	471,818	1,588,312
1881.....	1,207	2,628	652,963	1,988,199
1882.....	36	148	795,722	2,141,373
1883.....	507	1,172	645,924	3,013,555
1884.....	1,448	4,404	748,995	2,494,228
1885.....	4,976	15,848	768,477	2,548,432
Dec. 31, 1886.....	2,039	4,920	811,657	2,501,152
1887.....	14,181	42,983	819,242	2,609,311
1888.....	24,093	68,710	1,085,647	3,728,060
1889.....	20,652	117,434	1,001,374	3,425,347
1890.....	15,145	46,695	819,971	2,822,216
1891.....	37,607	112,722	1,363,313	4,561,105
1892.....	65,058	197,583	1,143,304	3,744,862
1893.....	53,768	148,112	1,082,993	3,623,892
1894.....	90,668	234,024	1,242,714	3,785,513
1895.....	141,337	328,705	1,212,023	3,626,623
1896.....	101,689	237,717	1,211,448	3,453,742

COAL.

Coal of domestic production exported from the United States, 1867 to 1896.

YEAR ENDING —	Anthracite.		Bituminous and shale.	
	Long tons.	Value.	Long tons.	Value.
June 30, 1867.....	192,912	\$1,333,457	92,189	\$512,742
1868.....	192,291	1,082,745	86,367	433,475
1869.....	283,783	1,553,115		
1870.....	121,098	803,135	106,820	503,223
1871.....	134,571	805,169	133,380	564,067
1872.....	259,567	1,375,342	141,311	586,264
1873.....	342,180	1,827,822	242,453	1,086,253
1874.....	401,912	2,236,084	361,490	1,587,666
1875.....	316,157	1,791,626	203,189	828,943
1876.....	337,934	1,869,434	230,144	850,711
1877.....	418,791	1,891,351	321,665	1,024,711
1878.....	319,477	1,006,843	340,661	1,352,624
1879.....	386,916	1,427,886	276,000	891,512
1880.....	392,626	1,362,901	222,634	695,179
1881.....	462,208	2,091,928	191,038	739,532
1882.....	553,742	2,589,887	314,320	1,102,898
1883.....	557,813	2,648,033	463,051	1,593,214
1884.....	649,040	3,053,550	646,265	1,977,959
1885.....	588,461	2,586,421	683,481	1,989,541
Dec. 31, 1886.....	667,076	2,718,143	544,768	1,440,631
1887.....	825,486	3,469,166	706,364	2,001,966
1888.....	969,542	4,325,126	860,462	2,529,472
1889.....	857,632	3,636,347	935,151	2,783,592
1890.....	794,335	3,272,697	1,280,930	4,004,995
1891.....	861,251	3,577,610	1,615,869	5,104,850
1892.....	851,639	3,722,903	1,645,869	4,999,289
1893.....	1,333,287	6,241,007	2,324,591	6,009,801
1894.....	1,440,625	6,359,021	2,195,716	4,970,270
1895.....	1,470,710	5,937,130	2,211,983	4,816,847
1896.....	1,350,000	5,925,503	2,276,202	5,072,818

WORLD'S PRODUCT OF COAL.

In the following table is given the coal product of the principal countries for the years nearest the one under review for which figures could be obtained. For the sake of convenience, the amounts are expressed in the unit of measurement adopted in each country and reduced for comparison to short tons of 2000 pounds. In each case the year is named for which the product is given.

THE WORLD'S PRODUCT OF COAL.

Country.	Usual unit in producing country.	Equivalent in short tons. ³
Great Britain, 1896.....	Long tons ¹	195,361,260
United States, 1896.....	“.....	171,416,390
Germany, 1896.....	Metric tons ²	112,437,741
France, 1896.....	“.....	29,310,832
Austria-Hungary, 1895.....	“.....	32,654,777
Belgium, 1895.....	“.....	21,213,000
Russia, 1896.....	“.....	9,079,138
Canada, 1896.....	Short tons ³	3,743,234
Japan, 1893.....	“.....	3,400,000
India, 1895.....	Long tons.....	4,441,890
New South Wales, 1895.....	“.....	3,737,536
Spain, 1896.....	Metric tons.....	1,878,399
Queensland, 1895.....	Long tons.....	719,546
New Zealand, 1894.....	“.....	805,892
Sweden, 1895.....	Metric tons.....	223,652
Italy, 1895.....	“.....	305,321
Transvaal, 1895.....	Long tons.....	1,152,206
Victoria, 1895.....	“.....	322,977
Natal, 1895.....	“.....	194,171
Cape Colony, 1895.....	“.....	153,951
Tasmania, 1895.....	“.....	87,985
Other countries.....	“.....	36,856
Total.....		2,240,000
Percentage of the United States..		660,550,426 29.06

1. Long ton=2,240 pounds, United States.

2. Metric ton=2,204.6 pounds, United States.

3. Short ton=2,000 pounds, United States.

In the pages following will be found a statement of the production of coal in the more important producing countries since 1868. This statement is interesting as showing the remarkable development of the industry in the United States. In 1868 this country produced only 14.35 per cent. of the world's total. Great Britain's output was more than 3.6 times that of the United States, and more than half of the world's total. Germany's product was nearly 15 per cent. more than that of this country, and more than 15 per cent. of the total output in the world. France produced nearly half as much as the United States.

The table shows that in 1896 this country produced 29.06 per cent.

of the world's total, while Great Britain's output was only 14 per cent. more than that of the United States. Great Britain's percentage of the total in 1896 was 33. Germany increased her percentage from 15 in 1868 to 19 in 1896, but her total was only 65 per cent. of that of the United States. The output of France was only 5 per cent. of the total in 1896, and about one-sixth of that of the United States.

KANSAS COAL-MINES.

CRAWFORD COUNTY.

This county is at present, and has been for years, by far the largest coal-producing county in the state. During the past year it gave employment to 3138 men and 48 boys. All of the mines produced 1,590,620 $\frac{3}{4}$ short tons, valued at the mine at \$1,566,761.44, or about 49 per cent. of the entire product produced in the state. There are 36 mines in actual operation in this county, and about 20 strip pits. All mines in the county worked an average of 120 days, and used 87,272 kegs of powder, or 2,181,800 pounds of powder, valued at \$174,544. Now when you add expenses for blacksmithing, oil, and tools, it runs the individual miner's expense in the county up to \$93.38 or 25.55 per cent. of his gross earnings for expenses, leaving him an average of \$226.83 for the days the mine worked, and an average for the year of 310 days of 87.8 cents per day. The mines loading railroad coal worked more days than the mines loading commercial coal. This average reduces the wages of the miner in the mine that loads railroad coal, and raises the wages of the miner who works where they load only commercial coal. Also, I want to add that the miners work many days preparing coal and doing other work, when the mine is not hoisting coal, getting ready for the day that the mine does hoist coal. Underground day men earned an average of \$240 for the number of days the mine worked, and an average for the 310 days of 77.4 cents per day. Over-ground men earned an average of \$177.60 for the number of days worked, or an average for the 310 days of 57.29 cents per day. Now, as seen from the above figures, and the number of days worked, and the amount of money earned by the miners and the day men, it is very plain to the average man that the miner and the day man, in order to pay rent and support a family, must necessarily practice the most rigid economy or go in want a part of the year, as many families do.

INSPECTION OF MINES.

Mine No. 1 belonging to the Mt. Carmel Coal Company is located at Frontenac and connected with the A. T. & S. F. railway. This is one of the largest mines in the state. It is equipped with the very best machinery, and plenty of steam power. Size of main shaft is 15x7 feet; size of air-shaft is 7x11 feet; size of fan is 5x15 feet; number of revolutions fan is run per minute, 70; manway in air-shaft

and a good traveling road leading to the bottom of the mine. This mine gave employment to 335 miners, 83 day men, and 3 boys; worked 263 days during the year and produced 315,695 tons of coal. Mine is opened up on what is known as the double-entry system; main entries are opened east and west, cross-entries north and south, and every 1200 feet parallel east and west entries are made and north and south entries turned off of them; and as fast as these parallel entries cut off the cross-entries they are then made the air-course, throwing the air on the face of the new workings, leaving the air in a better condition for the health of the miners than if it had continued passing through all the old workings. This method of working a mine shortens the distance the air has to travel many thousands of feet, and is a saving of hundreds of feet of tracking, and also a shortening of their haulage roads, as against traveling through and hauling coal on all of the cross-entries, and is an improvement over other methods for taking coal out where the mine is large and the worked-out area is large. A small volume of air is taken from the main volume and allowed to pass through the old blocks of work cut off by the new parallel entries, which carries back to the returning air-course all black damp and gases generating in the old workings, and keeps the same from mixing with the air going into the face of the new workings. The average thickness of the coal-vein is 3 feet 6 inches. The number of men employed at the time the Inspector visited the mine was, miners, 400; day men, 57; boys, 4; number of men working above ground, 18. Buildings are all in good condition. Kind of screens used, gravity and revolving; a good large run-around for men and cars at bottom of shaft; self-dump cages; blacksmith shop on bottom of mine for sharpening miners' tools and shoeing mules; stables for mules on both sides of the shaft. All boys who are given work in the mines must furnish a certificate showing that they have attended school three months out of the year. The main shaft is a downcast. Main volume of air is divided into four quarters at the face of main east and west entries. As this mine contains about twenty cross-entries on each side of the main entry, a small amount of air is taken from the main volume at each of these cross-entries and allowed to pass through the interior of the mine, along the brushed roadway to the face of the workings, and then returns back through the old workings to the air-course leading to the upcast. The area of this mine is large; it is opened up for over one and one-half miles. The men in charge of this mine manifest a commendable desire to keep the mine in a good and healthy condition. While the current of air at the working-face was not as strong as the Inspector would like to have seen it, what air was passing was pure, all the black damp and gases that accumulated in old works being carried back to return air-course,

and not allowed to mix with fresh air going to working-face. The reason the air was not as strong at working-face as it is in newer mines was, a large per cent. of air going into the mine had to be used through the old workings, to dilute and carry off all black damp and gases that accumulated in the old works. All roads in this mine are in good condition. The mine is entirely dry. The company uses two men watering entry roads every night. In fact, it would be better if it were not so dry. This mine could use mechanical haulage on west side of mine to a good advantage, for they have double track and good roads. Henry Wilson, superintendent; Edward Flynn, mine boss. Joseph Fletcher, successor to Henry Wilson.

Mine No. 4 belonging to the same company is located at Chicopee and connected with the A. T. & S. F. railway. This mine was abandoned and closed down indefinitely in January, but gave employment a part of the year 1897 to 150 miners, 21 underground day men, and 10 men above ground. Number of days mine worked, 10; produced 5022½ tons. All machinery and buildings have been taken down and moved away.

Mine No. 5 of the same company is located at Chicopee and connected with the A. T. & S. F. railway. This is a new mine, and is one of the best-equipped and opened-up mines in the state. Main shaft is 9 x 24 feet; air-shaft, 9 x 14 feet; depth of shaft, 90 feet; size of fan, 5 x 15 feet; number of revolutions fan was run at time of Inspector's visit, 51; manway in air-shaft. It has a large and roomy traveling way for the miners to ascend and descend. This mine gave employment to 200 miners, 26 underground day men, 18 men above ground, and 3 boys; worked 222 days during the year and produced 154,799 tons of coal. It is opened up on the latest improved system of room-and-pillar double-entry work; main entries open east and west; cross-entries north and south; brushed air-course on each side of main entries east and west; parallel entries to main east and west entries every 1200 feet; main shaft is downcast. The air in the mine is quartered at the head of the main east and main west, making four fresh currents of air passing through the mine, or a separate current for each quarter of the mine. Average thickness of coal-vein, 3 feet 6 inches; number of men employed at the time of the Inspector's visit, 210 miners, 15 day men, 4 boys. Buildings were all of the latest and substantial pattern, and all well spaced off—a good protection against fire. This mine is equipped with gravity and revolving screens; slack is elevated up into a separate building and dumped into a revolving screen. Also, this mine is equipped with the best machinery, and a large double hoisting engine of 400 horse-power; three large boilers, 30 feet long, 5 feet in diameter, single flues, cold-water pressure 150 pounds. The Inspector traveled through this

mine accompanied by Joseph Fletcher, who was at that time inspector of mines for the Mt. Carmel Coal Company, and found all roads in good condition and the mine well ventilated, except a couple of entries where break-through had not been connected up, on account of fault in the coal in that particular place. These places were being worked double, in order that connections might be sooner made, and Mr. Fletcher stated that in a few days they would be connected. Also, this mine passed through a fault of 650 feet on the west side, which was very expensive to drive through, and made it hard to make break-throughs until after they got beyond the fault, which they had just passed through, and were making the last break-through inside of the same, making all connections then complete in the mine, and the mine in good sanitary condition. Pete McCall, mine boss. Henry Wilson, superintendent.

An explosion took place in this mine No. 5, belonging to the Mt. Carmel Coal Company, upon the evening of January 8, 1898. This catastrophe took the lives of three of the six shot-firers, who were at work in the mine firing shots at the time of the explosion, and also completely wrecked the mine under ground as to overcasts, stoppings and doors for a distance around the center of the interior of the mine of about 750 feet, and tore the roof off the fan house and spread the sides of the same; also, more or less wrecked and damaged the pit head of the shaft. This same catastrophe was made the subject of the most rigid and thorough inquiry by men of every kind and degree — men of scientific attainments and men of lifelong experience in the practical workings of a coal-mine; also, the search-lights of three coroners and a jury were turned upon many witnesses in the witness-box, to show, if it was possible, the cause of the catastrophe that caused the loss of the three men's lives who were shot-firing the night of the explosion. After a careful examination of this mine on the Monday morning after the explosion, the Inspector, accompanied by a number of others, was not able to find any fire-damp in the mine, though he traveled in and out of many rooms in different parts of the mine, and into most likely places for fire-damp to accumulate. After working with a safety-lamp for some time he abandoned the use of it, and finished the examination with naked light. Now, I invite all intelligent and unprejudiced miners to carefully read the testimony of the men who testified at the coroner's inquest, which was held on the 9th and 10th of January, 1898, at Chicopee, and then let them judge as to the cause of the explosion; and if they will stop and think they will see that all of the catastrophes that have occurred in the mines in Kansas occurred about the same time in the year, and in new mines, where ventilation was of the best, and when the barometer was low; and, in all cases where practical miners and experienced men were

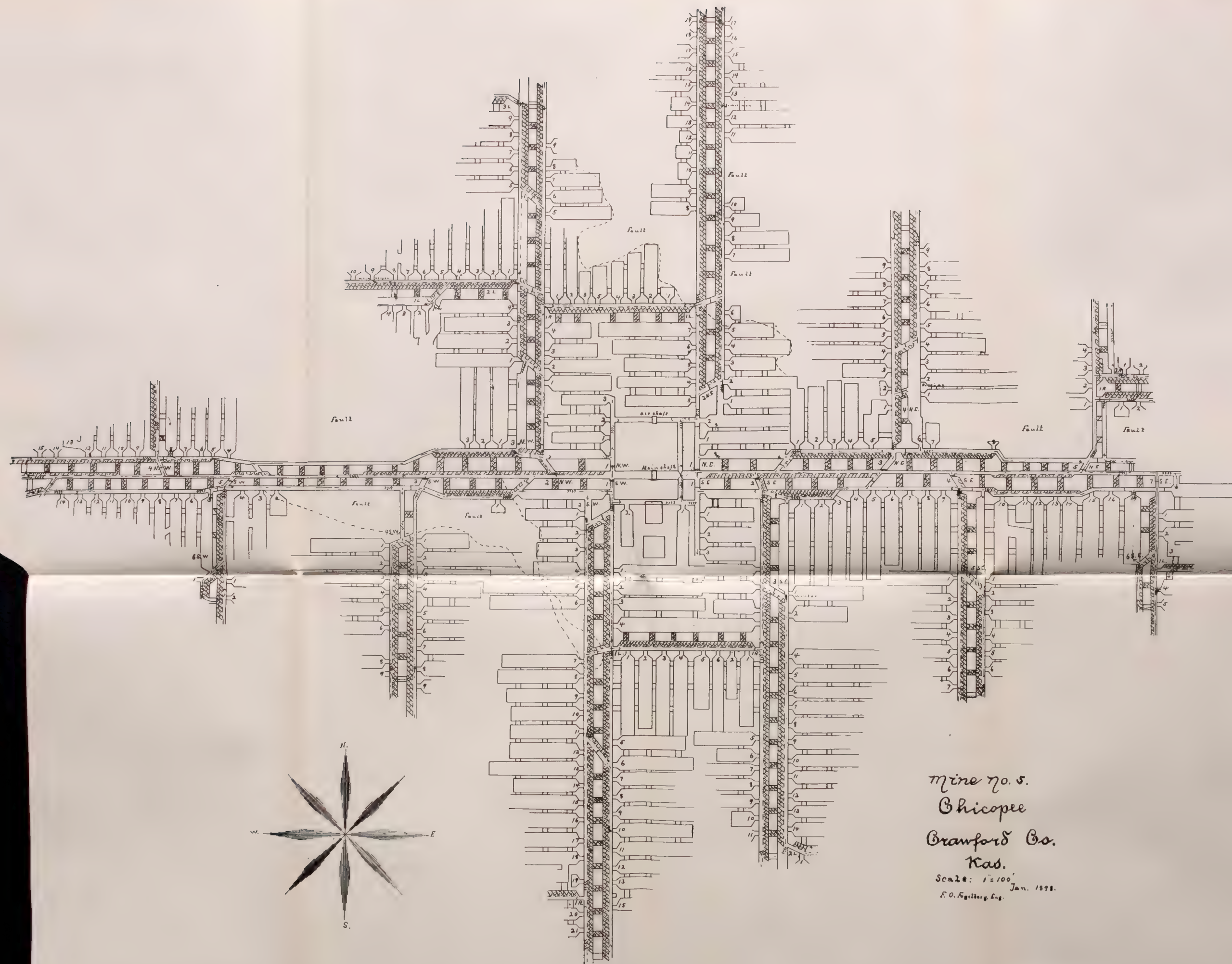
able to trace it, the explosion started from a gunning shot, or, as some say, a blow-out shot. In proof of this, I will take the mines where the area mined out is large, and the temperature of the mine at working-face about even. I quite often hear of a shot-firer getting slightly burned or getting a good scare from a windy shot or blow-out shot. Now, it is the opinion of the Inspector, based upon practical results, that the low barometer and extreme temperatures which the windy or blow-out shot comes in contact with has a great deal to do with the explosions, intensified by the coal-dust gathered as the explosion spreads. The Inspector and the witnesses who testified before the coroner's jury at Chicopee have been criticized by men who never were in the mine up to the time of the explosion; in fact, did not live in the county at the time that it occurred. This explosion occurred in 1898, and is not by law expected to be in this report; but it may be of great importance in getting the shot-firing law amended, that the public get all the details in connection of the same, and so help guard against a recurrence of the same. Also, for the benefit of those interested, the map facing page 16 will explain the underground workings of the mine up to the date of the explosion.

Mine No. 2 of the Wear Coal Co. is located south of Pittsburg, in a mining camp known as Kirkwood. This mine gave employment to 110 miners, 19 underground day men, 10 men above ground, and 2 boys; worked 225 days during the year and produced 87,461 tons of coal. This mine is a shaft opening, equipped with mechanical ventilation; good double engine for hoisting coal. Size of main shaft, 6 x 14 feet; size of air-shaft, 5 x 5 feet; size of fan, $4\frac{1}{2}$ x 12 feet; speed of fan, 70 revolutions per minute. Two large boilers furnish steam for the plant. This mine has three pump shafts, sunk on three different sides of the mine, for the purpose of pumping water out of it, and uses what is known as the Chinese belt pump. The air-shaft of this mine is too small to properly ventilate the mine. This mine is equipped with a slope, which is used as a traveling road for men and mules. This mine is opened up on the double-entry system; main entries run east and west, cross-entries north and south. Average thickness of coal-vein, 3 feet 6 inches; number of miners employed at the time of the Inspector's visit, 125; number of day men under and above ground, 24. All buildings around this mine are in good condition; mine equipped with self-dumping cages, gravity and revolving screens. No boys under twelve years of age allowed to work in the mine; all boys over twelve and under sixteen years must furnish mine boss with certificate showing that they have attended school three months during the year. Roads in this mine are poor on account of the mine making so much water; the only way roads can be kept up is by corduroying with props and ditching alongside of the road.

which was being done with first south off of first east entry at the time of Inspector's visit. Air in this mine was fair in most of the entries; a few short slants and a couple of short single entries in which air was a little light. Mr. Kirkwood said he would see to it that the air in those places would be made equal to the rest of the mine. Fifth north entry off of main west had taken a squeeze for a distance of six rooms or about 200 feet. This was being brushed through and timbered at the time of the Inspector's visit. The cause of this squeeze was a horseback running parallel with the entry for that distance, cutting the roof off on the entry pillar, and room pillars were too small to support the weight. There was one bad system practiced at this mine, which is also practiced in many others: the miners go into the mines through these pump shafts upon idle days and fire their own shots. Mr. Kirkwood stated that he never gave them any authority to do so; that he furnished shot-firers on the days that the mine worked, and if they did not produce coal enough for him he would then furnish them on idle days; but as he usually had more coal in the mines loose than they got out on the days that the mine hoisted, and they did not need extra coal, consequently they did not need shot-firers on idle days; and the men who usually fired shots on idle days were men who had difficult places or were brushing up entries. I brought this violation of law very strong on Mr. Kirkwood, and told him that he could stop it if he would do so, which he did by writing a notice, notifying all men working in the mine that the first man that fired his own shot would be discharged; also notified his day men to report to him any violation of that law; and from then on it put a damper on the violation of the shot-firing law. This is one of the best laws the miner ever had; it cost the miners hundreds of dollars and several small strikes, and the sacrifice of a number of their fellow men's lives, before they were able to have a law passed compelling all coal companies to furnish shot-firers to fire the shots, and the miner ought to be the last man to violate the law. In all cases the Inspector has made no exception in this matter, but has talked with the men and urged the companies where the men continue to do so to take a hand in this matter and see that the law was enforced; they could put an end to the violation of the shot-firing law at once. But in many instances the companies' officials, not directly but indirectly, are parties to the practice of the violation of the shot firing law, by leaving squibs in the engine-room and other convenient places, and know that the men are carrying them off and using them, and do not protest against it. The Inspector is glad to state that Mr. Kirkwood did put a stop to that practice in his mine. J. T. Kirkwood, mine boss. Archie Kirkwood, superintendent.

Mine No. 5 belonging to the same company is located northeast of

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mine no. 5.
Chicopee
Crawford Co.
Kas.

Scale: 1"=100'
Jan. 1898.
F. O. Egellberg, Eng.

Pittsburg and connected with the Mo. Pac. and A. T. & S. F. railways. This mine is a shaft opening, equipped with good machinery and mechanical ventilation, and gave employment to 110 miners, 15 underground day men, 2 boys, and 12 men above ground; produced 83,535 tons of coal and worked 234 days during the year. Size of main shaft, 10 x 5 feet; size of air-shaft, 8 x 8 feet; size of fan, 3 x 10 feet; speed of fan, 100 revolutions per minute; depth of shaft, 48 feet. There are two other shafts, and a manway in all three of them; the principal manway in first air-shaft. The mine was opened up on the single-entry system, but, after becoming the property of this company, changed to the double-entry system; main entries were formerly opened east and west, but changed to the north. Average thickness of coal-vein, 40 inches; number of miners employed at the time of Inspector's visit, 107; day men under and over ground, 24; boys, 2; buildings all in good condition; shaker screen for screening coal; run-around at bottom of shaft for employees to pass from one side to the other without crossing the cage. Roads all in good condition except two entries upon west side, and they are about up to boundary line. Straight cages in use. No boys hired under twelve years of age, and all boys over twelve and under sixteen years must furnish certificates showing that they have attended school three months out of the year. Inspector traveled through this mine accompanied by the mine boss, Wm. McKinley, and expected to find it in poor sanitary condition, as the Inspector had been informed that the mine was poorly ventilated, and that the miners were suffering from lack of proper ventilation; so he made a close and careful examination, and found the mine in fair condition. There were a couple of short entries along the boundary lines that were being driven upon the single-entry plan, one coming to meet the other; in these the air was poor. The miners who worked in there said they would come together in about thirty feet more; that would then make a straight air-course along that side of the mine and shorten the traveling of air several hundred feet. The miners informed the Inspector that had he visited the mine two months earlier he would have found the sanitary condition of the mine poor, as it had been formerly worked upon the single-entry system, and until they got connected up and the change made the sanitary condition undoubtedly was poor. Inspector told the miners that two months earlier was ahead of his time. The change for the better was brought about by the untiring work of Wm. McKinley, mine boss, who labored against many disadvantages until he got connections made and the air up to the working-face. Wm. McKinley, mine boss. Archie Kirkwood, superintendent.

Mine No. 6 belonging to the same company is located north of

Pittsburg and connected with the A. T. & S. F. railway. This mine gave employment to 70 miners, 12 underground day men, 2 boys, and 9 men above ground; worked 78 days during the year and produced 20,482 tons of coal. This is a shaft opening with mechanical ventilation; depth of main shaft, 50 feet; size of main shaft, 6 x 13 feet; size of air-shaft, 6 x 12 feet; size of fan, 4 x 14 feet. This mine has a model fan, one of the best in use, but it is set square over the air-shaft, which is a very poor plan; a good and roomy manway in air-shaft. This mine was employing 65 miners and 2 boys, and 20 day men under and above ground, at the time of the Inspector's visit. The Inspector traveled over the mine accompanied by John Kirkwood, mine boss, and found the sanitary condition of the mine on the west side poor, on account of return air-ways being too small. This mine had been idle for a long time, and the back entries' air-course was not brushed, and had heaved up until it was too small to receive the volume of air necessary to ventilate the mine. Mr. Kirkwood is an aged man, and felt badly because the sanitary condition of his mine was so poor, but stated to the Inspector that in one week he would have the south side connected, and in two weeks the west side connected, as he was pushing an air-course through and intended to brush the same, so that when I came back again I would not find his mine in such poor condition. When these connections are made he will have no trouble in ventilating his mine. Inspector requested Mr. Kirkwood to change the men working in the head of the main west entry until south side connections were made, which he agreed to do. Roads were all in good condition except two entries on the north; these were dry and dusty. Mr. Kirkwood stated he had ordered them cleaned up and watered, and that he would see that it was done. Average thickness of coal, 38 inches. The mine is equipped with gravity and revolving screens; straight cages in use. No boys hired under twelve years of age; all boys over twelve and under sixteen years of age must furnish a certificate showing that they have attended school three months out of the year. Machinery all in good condition; a light double hoisting engine of about 34 horse-power; one large shell boiler, 40 feet long by 4 feet in diameter, which furnishes ample steam to run all machinery. Buildings all in good condition. John Kirkwood, sr., mine boss. Archie Kirkwood, superintendent.

Mine No. 2 of the Western Coal and Mining Co. is located at South Fleming and connected with the Mo. Pac. railway. It gave employment to 116 miners, 13 boys, 18 underground day men, and 10 day men above ground; worked 174 days during the year and produced 75,307 tons of coal. This is an old and very extensive mine, the worked-out

area being very large. Size of main shaft, 6 x 10 feet; size of air-shaft, 5 x 5 feet; size of fan, $3\frac{1}{2}$ x 10 feet. This air-shaft is too small to handle the volume of air that is necessary to properly ventilate the mine, or, in other words, bring it up to the standard that it ought to be. Philip Roeser, mine boss, stated to the Inspector that it was the intention of the company, if they continued to work this mine, to make the sanitary condition of the mine all right by sinking a new air-shaft, and, beginning at bottom of main shaft, to brush two main roads east and west to working-face, and cut off all of the old workings and open up new in the solid face, and also put in mechanical haulage. As the underground workings of this mine are large, and the air is poor in many places at working-face, it is necessary that something should be done to place this mine in a proper sanitary condition. Since the Inspector visited the mine I am told that these changes will be made. This mine is equipped with good machinery; a light double engine of about 50 horse-power; one brace of boilers; buildings all in fair condition; gravity and revolving screens in use. No boys hired under twelve years of age; all boys over twelve and under sixteen years of age must furnish a certificate showing that they have attended school three months out of the year. Philip Roeser, mine boss. Archie Craig, superintendent.

Mine No. 3 belonging to the same company is located at Fleming and connected with the Mo. Pac. railway. It gave employment to 40 miners, 6 underground day men, and 7 day men above ground; worked 30 days and produced 5884 tons of coal during the year. The work done in this mine was done early in the season, and then it was closed down, but is again being put in operation. John Mooney, mine boss. Archie Craig, superintendent.

Mine No. 4 belonging to the same company is located northeast of Yale and connected with the Mo. Pac. railway. It gave employment to 138 miners, 17 underground day men, 2 boys, and 10 day men above ground; worked 155 days and produced 87,574 tons of coal during the year. This mine is opened by shaft; steam power; mechanical ventilation. Size of main shaft, $12 \times 6\frac{1}{2}$ feet; size of air-shaft, $9\frac{1}{2} \times 6$ feet; depth of shaft, 6 feet; size of fan, 4 x 12 feet; speed of fan, 70 revolutions per minute; manway in both main and air-shafts. This mine is opened up on the double-entry system; main entries run north and south, cross-entries run east and west; buildings were all in good condition; gravity and revolving screens in use; run-around at bottom of shaft for employees and pit cars to pass from one side to the other without passing under the cage. Average thickness of coal vein, 34 inches. Roads in good condition. Mine equipped with self-dumping cages. No boys allowed to work in the mine under

twelve years of age, and all boys over twelve and under sixteen years of age must furnish a certificate showing that they have attended school three months out of the year. The air is divided into four quarters in this mine. The Inspector found that in the west quarter upon south side of mine the air was light; also, in east quarter upon north side. This was caused by making or extending a parting or double track, and taking out all of the pillar for about 200 feet, and the filling in and building a wall of loose rock, from the roof that had been brushed down. The air was losing through this loose and open wall and returning back to the upcast shaft. Mr. Roberts, mine boss, satisfied the Inspector that in about two or three weeks he would have a connection through from second to third east entries, and that would cut this leakage off and carry the air through its new connections. The trouble on the southwest quarter was caused by east quarter being shorter to upcast and more roomy than west quarter for the air to travel in. This Mr. Roberts agreed to have regulated at once. The Inspector also finds air light at the face of some of the other entries; cause, not being connected up close enough to working-face by break-throughs. This Mr. Roberts agreed to take care of just as soon as the miners could make connection. The Inspector suggested to Mr. Roberts that he had better stop work on the face of those entries and throw all the work on the break-throughs until they were connected, and see that all connections in the future were made in proper distances, or something close to it. This mine is also equipped with mechanical haulage in the way of a tail rope, which is laid in the main north entry 940 feet; then into east cross-entry 1620 feet, west cross-entry 1740 feet; making the length of the haulage from bottom of main shaft to the end of east cross-entry 2560 feet; to the end of west cross-entry, 2680 feet. Main rope is three-eighths of an inch thick, of steel wire; cross-entry rope half inch thick. A trip is made to either end of cross-entries in seven minutes, with twenty-five loaded mine-cars, an electric bell being used as a signal to start and stop the same. A switch-board is used for connecting cross-entries with main-entry haulage rope. Everything in connection with this haulage rope seemed to work smoothly and give good satisfaction. Edward Roberts, mine boss. Archie Craig, superintendent.

Mine No. 6 belonging to the same company is located north of Yale. At the time of the Inspector's visit it was closed down indefinitely, and had been since October, 1896. Rails and iron all pulled out. Archie Craig, superintendent.

Mine No. 7 belonging to the same company is located southeast of Fleming and is connected with the Mo. Pac. railway. It gave employment to 176 miners, 2 boys, 9 underground day men, and 9 over-

ground day men; worked 184½ days and produced 72,084 tons during the year. This is a new mine, and is equipped with all the latest improved machinery; buildings are all new and are of the best; all spaced off a good, reasonable distance, which is a great protection against fire. This mine is also equipped with a large double hoisting engine of about 170 horse-power; mechanical ventilation; also a machine-shop, with lathes, drills and saws for making all of their own iron and sawing out lumber, making everything ready for putting up a mine-car at the mine. Size of shaft, 8 x 13 feet; size of air-shaft, 8 x 13 feet; size of fan, 4 x 16 feet; depth of shaft, 75 feet; a large and roomy manway in air-shaft; brushed road for miners to travel from east and west side of main shaft to the air-shaft. This mine is opened up on the double-entry system; main entries east and west, cross-entries north and south. Average thickness of coal-vein, 42 inches. Number of miners employed at the time of the Inspector's second visit, 170; day men combined, 18. This mine is also equipped with self-dumping cages, gravity and shaker screens, a large and roomy run-around in bottom of shaft for employees, mules and mine-cars to pass from one side of the shaft to the other without crossing over or under the cage. Roads in this mine all in good condition. No boys hired under twelve years of age; all boys over twelve and under sixteen years of age must furnish a certificate showing that they have attended school three months out of the year. This mine is equipped with two large steel boilers, 60 inches in diameter, 23 feet long. Each boiler has 18 six-inch flues; also, there are four separate fresh currents of air passing through the mine. On my first visit doors in this mine were not up, for the reason that it was so close to the working-face that the shots would jar them to pieces, and curtains were substituted instead. On my second visit all doors were up in good shape, all connections made, and the sanitary condition of the mine was practically good. Overcasts at bottom of mine large and roomy; traveling roads for the employees leading to the manway brushed 6 feet high. In fact, this is one of the best manways for miners to descend into and ascend out of the mine that there is in the state at the present time. In addition, this mine has a large warehouse and a granary stationed off at a reasonable distance from other buildings; also water-pipes, and water plugs stationed at irregular places among the buildings and upon the top of the pit heads; these are all connected and attached to their water pumps; also, the same are run down into the mine and into the mule stable. Every precaution is taken to guard against fire. Fan house at this mine is one of the best in the state; it is so constructed that in case of an explosion one side of the fan house would become detached without injuring the fan or fan house, and could be boarded

up again in a few minutes in case of accident from explosion, so as to be able to start ventilation into the mine. Taking everything into consideration from a practical standpoint, this is one of the best-equipped and systematized mines in the state. Also, they have sunk an artesian well, and are piping the water over the mining camp, so that the miners and their families will have pure and healthy water, instead of, as is done in many camps, having to use water for two or three months in the dry season of the year out of strip pits and old ponds, which are full of decayed vegetable matter and very injurious to the miners and their families, causing a great deal of sickness. J. C. Gardner, mine boss. Archie Craig, superintendent.

Mine No. 20 belonging to the Kansas & Texas Coal Company is located one and one-half miles south of Pittsburg, on the St. L. & S. F. railway. It gave employment to 91 miners; all other employees, 20; worked $190\frac{1}{2}$ days and produced 80,168 tons of coal during the year. This is a shaft opening with mechanical ventilation; machinery in fair condition; buildings were only in fair condition. Size of main shaft, $7\frac{1}{2} \times 15$ feet; size of air-shaft, 8×8 feet; size of fan, $3\frac{1}{2} \times 12$ feet; speed of fan, 100 revolutions per minute; manway in main shaft. Mine opened up on double-entry system; main entries north and south, cross-entries east and west. Average thickness of coal-vein, 40 inches. Gravity and shaker screens in use, constructed for making five different grades of coal; run-around in bottom of shaft, for employees and mules to pass from one side to the other without crossing under or over the cages; this mine is also equipped with a light double hoisting engine; three shell boilers, 44 inches in diameter; two of them 28 feet long and one of them 24 feet long. General sanitary condition of this mine poor. Inspector found the roads in this mine in very poor condition, many of them being covered with mud and water from one end of the mine to the other. Mr. Barrowman stated to the Inspector, as the reason of this bad condition of roads, that the mine was making a large amount of water by leaks from breaks from the surface; also, that they were getting ready to close down the mine indefinitely, and they were only finishing up the small pieces of coal in the extreme parts of the mine. Air in this mine over the parts that were being worked was in fair condition. Inspector found that in two places the air was poor on account of brattice being down. Mr. Barrowman gave orders to have this attended to at once; also stated that the mine would be worked out before the end of the year, as it was becoming too expensive from an oversupply of water, which was destroying every road in the mine, and it would not pay to continue it on; from present indications it will not be worked out until fall. John Barrowman, mine boss. Floyd Doubleday, superintendent.

Mine No. 37 belonging to the same company is located northwest of Litchfield and connected with three different railroads — St. L. & S. F., K. C. & F. S. & M., and Mo. Pac. This mine gave employment to 114 miners, and 39 day men under and above ground; worked 127 days and produced 76,916 tons of coal during the year. This is a shaft opening; mechanical ventilation; equipped with a light double hoisting engine; gravity and shaker screens for cleaning coal. Size of main shaft, 8 x 16 feet; size of air-shaft, 8 x 10 feet; depth of shaft, 65 feet; size of fan, $3\frac{1}{2}$ x 12 feet; speed of fan, 100 revolutions per minute; manway in main shaft. This mine, at Inspector's visit, was in operation and one-half of the employees were colored. This mine was opened up on the single-entry system, but changed to double-entry system. Main entries are supposed to run east and west, but they are so crooked that it is hard to tell how they do run. Coal-vein averages 38 inches in thickness; buildings are in fair condition; run-around at bottom of shaft for employees to pass from one side to the other; part of the roads in this mine are in fair condition, and in the other part of them the mules can hardly find the bottom, they are so muddy. The sanitary condition of the mine is poor at all working-faces. William Edgely, mine boss, stated to the Inspector that he had a dozen day men at work on the air-courses, and in a couple of weeks he expected to have the ventilation in the mine in good condition. The cause of this poor sanitary condition was that the mine had been opened up on the single-entry system, and at the time of the Inspector's visit was changing to double-entry system and connections were not made, and return airways were too small. The Inspector finds that two of the mining laws were entirely ignored at this mine; namely, the shot-firing law and the law regulating the amount of powder that shall be taken into the mine at one time, which is $12\frac{1}{2}$ pounds. At this mine whole kegs were taken in by nearly every miner in the shaft. The Inspector examined twenty of the miners' tool-boxes, and found squibs in bottles in nearly every box, and in some full kegs of powder. These squibs were used for the purpose of firing shots upon idle days. Some of the white miners seemed to be honest in the matter in connection with the full kegs of powder. They stated to the Inspector that powder was given out to them by the full keg; and while they had a separate building spaced off for each man to leave half of his keg of powder in, whenever they did so and went back after the remainder of their powder it was usually gone, and nobody knew who took it. That being the case, the Inspector did not feel like blaming them very much. The general indication was it was a kind of go-as-you-please shaft; few rules enforced, and a general all-around violation of the general customs and rules. The Inspector came out on top at noon, knowing that powder

would be given out, and requested Mr. Edgely, mine boss, to say nothing as to his presence, and to proceed with the usual method of handing out powder, as they did when the Inspector was not there. About thirteen miners got powder, all a full keg each, and went over to the miners' powder house, made a hole in the keg, put a corn cob or some old hay into it, and then started to carry it down into the mine, when the Inspector met them and stopped them, by calling their attention to the mining law that prohibited the taking of more than $12\frac{1}{2}$ pounds of powder at one time into the mine; then they went back, hunted up old rusty powder cans and kegs, and tried to divide up their powder, and managed to get the bulk of it into the mine, by getting disinterested parties who did not come out for powder to carry a part of it into the mine for them. Now, Mr. Edgely knew that he had a crowd of men that were dishonest with each other; they would steal each others' tools, also each others' dinners, as many come to the mine without any dinner; in fact, they would steal anything that was loose. This being the case, the Inspector told Mr. Edgely that if he could not protect the honest men with their powder he had better make arrangements to only give out $12\frac{1}{2}$ pounds at one time; also that squibs were left in the engine-room, and it was a well-understood fact that the miners were carrying them off and using them; and when I called Mr. Edgely's attention to that fact he said he could not help it, as the miners would steal the squibs. In answer the Inspector stated, "Yes, and when one box of squibs was stolen you managed to have another box put in the same place," and it was generally understood that they could get squibs whenever they wanted them, and nobody protested against them taking the squibs. The Inspector told Mr. Edgely that this all-around, go-as-you-please violation of the mining law had to cease, and that if he did not attend to it, and put a stop to it wherever he could, the Inspector would have the whole outfit arrested, including the mine foreman, as a party to the violation of the mining laws; since then Mr. Edgely has done better. Wm. Edgely, mine boss. Floyd Doubleday, superintendent.

Mine No. 1 belonging to Arnott & Co. is located northeast of Pittsburgh and is connected with the A. T. & S. F. and K. C. P. & G. railways. This mine gave employment to 75 miners; underground day men, 11; over-ground day men, 10; worked 227 days and produced 55,361 tons of coal during the year. This is a shaft opening; mechanical ventilation; size of main shaft, 7 x 14 feet; size of air-shaft, 8 x 8 feet; depth of shaft, 50 feet; size of fan, 3 x 10 feet; speed fan operated, 65 revolutions per minute; manway in air-shaft. Mine opened up on the double-entry system; main entries north and south. Average thickness of coal-vein, 40 inches. Buildings were all in fair condition; gravity and revolving screens in use; all machinery in good condition;

light double engine, of about 60 horse-power; one boiler, 44 inches in diameter by 18 feet long. All roads in the mine were in good condition but two; these were wet and very muddy. Mr. Arnott, mine boss, stated to the Inspector that these haulage roads were about to the line, and in a few weeks the track would be pulled out of them and they would be abandoned. The Inspector traveled through this mine, accompanied by Mr. Arnott, and found the air light in many places. The cause was poor curtains where there ought to have been stoppings, and in other places curtains where there ought to have been doors. When Mr. Arnott's attention was called to the fact he agreed to have it attended to at once, and have all connections made and air conducted to working-face. No boys hired under twelve years of age; all boys over twelve and under sixteen years have to furnish a certificate showing that they have attended school three months out of the year. Since writing the above the Inspector has learned that the sanitary condition of the mine is better. David Arnott, mine boss and superintendent.

Mine No. 4 belonging to the Pittsburg & Midway Coal Company is located one-half mile northwest of Midway and connected with the St. L. & S. F., A. T. & S. F., and K. C. F. S. & M. railways. This mine gave employment to 150 miners, 4 boys, 16 underground men, and 11 over-ground men; worked 176 days and produced 100,036 tons of coal during the year. This mine is a shaft opening; mechanical ventilation; equipped with a large double hoisting engine, self-dumping cages, and all the latest improvements for handling coal rapidly. Size of main shaft, 8 x 13½ feet; size of air-shaft, 8 x 8 feet; depth of shaft, 75 feet; size of fan, 3½ x 12 feet; speed of fan, 70 revolutions per minute; manway in air-shaft. Mine opened up on the double-entry system; main entries east and west, cross-entries north and south. Average thickness of coal-vein, 38 inches. Buildings were all in good condition; gravity and shaker screens in use; run-around at bottom of shaft for employees to pass from one side of the shaft to the other without going over or under the cages. All roads but one in the mine are straight, roomy, and in good condition. The Inspector traveled all over this mine, accompanied by Mr. Jones, mine boss, and found the mine in good sanitary condition. Three of the back entries needed doors where curtains were hanging. Mr. Jones stated that he had the doors already made, and had the Inspector been about three days later in visiting his mine, or should he come back in three or four days he would find the doors where the curtains were now hanging. This mine is in fine shape to produce a large amount of coal. The first north entry upon the east side of shaft is in a good distance, and has a great deal farther to go, and is as straight as a line could be drawn. Mr. John Morrison, superintendent for this company, stated

to the Inspector that he thought the company would put in mechanical haulage upon that side of the mine, in the way of a tail rope, with machinery for operating the same to be placed on the surface and the ropes to be operated through drill holes. No boys are hired under twelve years of age, and all boys over twelve and under sixteen years must furnish a certificate showing that they have attended school three months out of the year. Also, this company owns another mine known as No. 5, which has good buildings, good machinery, and everything in first-class order for handling coal. This mine has been shut down since June, 1895, and never worked but six months after it was sunk. No cause given for shutting it down, but it is generally supposed that it was shut down for the reason that the company could get all the coal that they had a market for from the No. 4 mine and save the expense of keeping the No. 5 mine in operation. Thos. Jones, mine boss. John Morrison, superintendent.

Mine No. 3 belonging to William H. Barrett, successor to T. M. Barrett, is located northeast of Weir City and is connected with the St. L. & S. F. railway. This is a gin shaft; has two openings, one pump, and one hoisting shaft. This mine gave employment to 15 miners, 5 underground men, and 4 above ground; worked 50 days and produced 1600 tons of coal during the year, while being operated by Wm. H. Barrett, as Mr. T. M. Barrett made no report of the amount of coal produced while he operated the mine last year. This mine is opened up and worked on a kind of a single-entry system, and the system of ventilation is natural. At the time the Inspector visited this mine it was in very poor condition, only one entry being worked in the mine; it had no connections for return airway; in fact, the mine had no ventilation where it was being worked. When the wind was blowing favorably a little air went down one shaft and out the other. I told Mr. Barrett's son that his father ought to be ashamed of himself working men in such a hole as that, and that, if he did not build a stack upon his pump shaft 24 or 30 feet high and connect up his airways, so as to ventilate the mine where it was being worked, I would have to shut him down until he did so. In about two weeks the Inspector went back again, and was informed that T. M. Barrett had leased to Wm. H. Barrett, superintendent for the K. & T. Coal Company, and the said Wm. H. Barrett had subleased to T. M. Barrett's two sons, namely, John and Joseph Barrett, and they stated to the Inspector that they had orders to go ahead and fix the mine up, pump the water out, put a fan upon the air-shaft, and open the mine up in workmanlike shape, and that in a few days everything would be fixed and be made satisfactory. Later, Wm. H. Barrett informed the Inspector that the necessary improvements and connections in the mine had been made, and the mine was now in good condition.

The average thickness of the coal-vein was 3 feet 8 inches, with good, black slate roof. Since these men leased the mine the sanitary condition has been better. John and Joseph Barrett, lessees. Wm. H. Barrett, superintendent.

Mine No. 1 belonging to the Weir Junction Coal Company, successors to Swab Coal Company, is located north of Weir City and connected with the K. C. F. S. & M. railroad. This mine gave employment to 50 miners, 9 underground day men, and 8 over-ground day men; worked 195 days and produced 22,660 tons of coal during the year. This is a shaft opening; mechanical ventilation; manway in air-shaft. Jonathan Swab accompanied the Inspector through the mine, and found the sanitary condition of the mine in many places poor; cause, air leaking through stoppings and not going to working-face. Mr. Swab agreed to go ahead at once and put in stoppings and open up return airways, and conduct air to the working-face. The reason he gave for not having it done before was, they had been working very poorly, and their expenses had been large and they were not able to pay out the money to have the work done, but that they would go ahead themselves, as the mine was only working part of the time, and make such necessary changes as would properly ventilate the mine. This mine is equipped with a light double hoisting engine; gravity and revolving screens; buildings in fair condition. Jonathan Swab, mine boss.

Mine No. 9 belonging to the Central Coal and Coke Company is located west of Nelson and connected with the K. C. P. & G. railroad. It gave employment to 135 miners, 18 underground day men, 2 boys, and 14 over-ground day men; worked 241 days during the year and produced 99,373½ tons of coal. This mine is equipped with the best of machinery for handling coal, two large boilers for raising steam, and a strong and powerful double engine for hoisting coal; size of main shaft, 7 x 14 feet; size of air-shaft, 7 x 8 feet; depth of shaft, 90 feet; size of fan, 4 x 4 feet; speed fan operated per minute, 72 revolutions; manway in main shaft. This mine is opened up on the double-entry system; main entries run north and south, cross-entries run east and west. Number of miners employed at the time of Inspector's visit was 130; number of day men employed above and below, 24. Buildings are all in good condition; gravity and revolving screens in use; run-around at bottom of shaft for employees to pass from one side of the shaft to the other without passing over or under the cage. All roads in good condition. No boys hired under twelve years of age; all boys over twelve and under sixteen years must furnish a certificate showing that they attended school three months out of the year. Overcasts upon both sides of the main shaft. Air is quartered at the head of both main entries. Sanitary condition of the mine in

first-class shape, except two east entries off main south, known as the third and fourth east entries. The cause of the poor sanitary condition in these two entries was from a squeeze upon second east entry, partly closing the return air-course. Mr. Gilchrist, mine boss, stated to the Inspector that they would not open up the air-course, but were going to move the overcast further in, or just south of the third east entry, which would then give him just as good air in that quarter of the mine as there was in any other part of the mine, and until this work was completed Mr. Gilchrist agreed to increase the pressure of air; that would increase the volume of air that was now passing through both entries, which was still very fair. Robert Gilchrist, mine boss. David Mackie, general superintendent.

Mine Nos. 1 and 2 belonging to the Empire Coal and Mining Company is located at Coalvale and connected with the K. C. F. S. & M. railroad. This mine employed 16 miners, 6 underground day men, and 7 over-ground day men; worked 163 days and produced 4154 tons of coal during the year. This is a shaft opening; gin power; depth of shaft, 23 feet; average thickness of coal-vein, 32 inches. The Inspector was notified by a committee of miners of the poor sanitary condition of the mine and in three or four days afterwards paid the mine a visit, and found that the mine only had one opening, furnace ventilation, and that it was very poorly constructed, also dangerous; but just before the Inspector visited this mine the company had made some improvements upon the furnace which made it more safe; also, they improved the condition of air in the mine. The Inspector requested the company to have a second opening made, for the safety of the miners in case of accident from fire or other causes. The company stated to the Inspector that they were pumping the water out of No. 2, and that they would be ready in a few days to operate the same, and would at once sink an air-shaft and fix their mine up in good condition. The Inspector left word with the miners' committee that, if this was not attended to, to so notify him. Having received no further complaint, the condition of the mine must have been made safe. Also, the miners told the Inspector that this was the first time the Inspector had visited these mines in over two years. Later, I am informed that this company has failed and gone out of business. John Ogden, superintendent. C. W. Green, mine boss.

Mine No. 1 belonging to the J. E. Lewis Coal Company is located one mile southwest of Coalvale depot; no railroad connections. This is a local-trade mine. A light threshing engine and boiler are used for hoisting power, attached to a home-constructed drum. The mine is 75 feet deep; thickness of coal, 34 inches; one opening; airway bratticed off main shaft; fire swung in what is called a "jack," to

assist in making a draft to ventilate the mine. The fire was not dangerous, and the mine had reasonable ventilation, as the worked-out area was small and easy to ventilate. The Inspector told Mr. Lewis that the law required an escapement shaft, for the safety of him and his men in case of an accident; in reply he stated, that he only worked his mine a few months during the year, and never had over six men working, and he and his boy usually made two of them; and that he was poor and could not hire the air-shaft sunk at that time; and that if I insisted on his doing so he would be compelled to shut down, but if I would give him a little time he would make an effort to sink an air-shaft. The size of the main shaft is 6 x 12 feet, 3 feet being bratticed off for an air-shaft. Joseph E. Lewis, mine boss and superintendent.

Mine No. 2 belonging to the Pittsburg Coal and Coke Company, and leased by J. T. Ryder, is located six miles south of Pittsburg. This mine employed 40 miners, 6 underground day men, and 5 day men above ground; worked 245 days and produced 25,628 tons of coal during the year. This mine has railroad connections from the K. C. F. S. & M. railroad. At the time of the Inspector's visit it was leased by Young & Ryder. These men are poor, and their term of lease expired May 16, 1897. They leased the mine and produced the coal so cheaply that they were not able to fix up the mine as it ought to be. The Inspector found the sanitary condition of the mine very poor; in fact, I do n't know how they were able to keep miners at work for them until their lease expired. Mr. Ryder stated to the Mine Inspector that he could do nothing; that he was squaring up to quit, and would not lease the mine again for the cheap price that they had produced coal during the past year, and if they leased again they would fix the mine up. The Inspector told Mr. Ryder that if they intended to work the mine any more they would have to sink an air-shaft and timber the bottom of the shaft, as it was not safe. The Inspector left stating that he would be back in a short time. Later, he was informed by Mr. Ryder that they had leased the mine again, and had sunk a new air-shaft, put in new timbers, and made such other changes as the Inspector had requested. J. T. Ryder, mine boss.

Mine No. 1 belonging to the A. J. Bell Coal Company is located northeast of Coalvale and connected with the K. C. F. S. & M. railroad. This mine employed 15 miners, 3 underground day men, and 2 day men above ground; produced 3560 tons of coal during the year. This is a drift opening, worked upon the single-entry system; furnace ventilation; average thickness of coal-vein, 34 inches. The sanitary condition of this mine was very poor at the time of the Inspector's visit; cause, air-courses were too small to admit sufficient volume of air to properly ventilate the mine. Very little work would put the

sanitary condition of the mine in good shape. The mine is practically dry. The mine boss, A. J. Bell, jr., seemed to know but little about the working of the mine, but was willing to go ahead and make the changes suggested to him by the Inspector, and seemed to be very willing to do what was right, so far as he knew. A. J. Bell, jr., mine boss. A. J. Bell, sr., superintendent.

Mine No. 1 belonging to Miller Bros. & Co. is located north of Mulberry, on the K. C. F. S. & M. railroad. This mine employed 15 men a part of the year and produced 8000 tons of coal. This is a shaft opening; steam power. At the time of the Inspector's visit this mine was just down, and bottom drifted in about 30 feet on two sides. From information gained at the time, every prospect for a paying and productive mine was visible. Mike Smith, mine boss. W. H. Miller, superintendent.

Mine No. 1 belonging to Kansas Commercial Coal Company, successor to the Fuller Coal Company, is located at Fuller and connected with the K. C. P. & G. railroad. This mine gave employment to 45 miners, 9 underground day men, 4 boys, and 8 over-ground day men; worked 158 days and produced 20,779 tons of coal during the year. This is a shaft opening; steam power; mechanical ventilation. Size of main shaft, 7x15 feet; size of air-shaft, 8x12 feet; size of fan, $3\frac{1}{2}$ x12 feet; speed of fan, 84 revolutions per minute; depth of shaft, 47 feet; manway in air-shaft. Mine opened up on the double-entry system; main entries north and south. Average thickness of coal-vein, 34 inches. Buildings all in good condition; gravity and revolving screens used; run-around at bottom of shaft for employees to pass from one side to the other without passing over or under the cages; safety catches upon cages; straight cages in use. No boys hired under twelve years of age; all boys over twelve and under sixteen years of age must furnish a certificate showing that they have attended school three months out of the year. Machinery all in good condition; two 36-flue boilers, 54 inches in diameter, 16 feet long, for raising steam; double hoisting engine of about 70 horse-power. This mine had been working very poorly for some time, but at the time of the Inspector's visit, Mr. Newland, mine boss, stated that he thought they would do better from now on; also, that he could use a few more miners at that time, but miners were afraid to move their families there unless they could be assured of more steady work. The Inspector traveled all over this mine, and found the sanitary condition good; all entries had been stopped for some time, for the purpose of working out some of the rooms that were only partly driven in; but just as quick as his employees numbered 100 he would start them up again. There are about thirty cottages of three and four rooms each for the miners and their families to live in, located upon high ground,

and, from all appearances, it is about as healthy a mining camp as there is in the district. East quarter of this mine was not being worked at the time of the Inspector's visit, but all connected up and in good working order.

Mine No. 3 belonging to the same company is leased from the Sherodd Coal Company for five years, and is located about two miles north and east of Midway and connected with the Mo. Pac. railway. This is a shaft opening; steam power; mechanical ventilation. It has been shut down since December 8, 1896, but a man by the name of G. F. Maute is kept there to look after the property and pump the water out of the mine; he is under the supervision of Chris. Newland, mine boss of No. 1 of the same company. Inspector found all buildings at shaft in fair condition; machinery in good order; but in looking over the camp of about 40 dwelling-houses, he found them slowly going to wreck for lack of usage. Chris. Newland, mine boss.

Mine No. 1 belonging to the Eureka Coal and Mining Company is located one and three-fourths miles north and one-fourth mile west of Frontenac. This is a shaft opening, with gin power, and is a new mine, sunk on what is known as the Baxter farm. Leased by John Anderson, of Pittsburg. Size of main shaft, 6x12 feet; depth of shaft, 108 feet; air-shaft just started, size 6x6 feet. At the time of the Inspector's visit this mine was opened up about 70 feet north and 70 feet south, and was not brushed. Average thickness of coal was 38 inches. A smooth top and bottom, and a good quality of coal. This is a local-trade mine and has no railroad connections, but they expect to get a switch from the A. T. & S. F. railway or the K. C. P. & G. railroad. There are four other veins of coal between the bottom vein and the surface; three of these veins are not general; 32 feet from surface there is a 23-inch vein of coal; 50 feet from surface there is a coal-vein 8 inches thick; 70 feet from surface another vein, 6 inches thick; 88 feet from surface another vein, from 5 to 6 inches thick. It is generally conceded that the latter three veins run out, as they are not generally known in the surrounding country; but the 23-inch vein is stripped in many places where the surface is shallow. Should this company be able to get railroad connections they intend to put in steam power and fit up a good mine. John Anderson, mine boss and lessee.

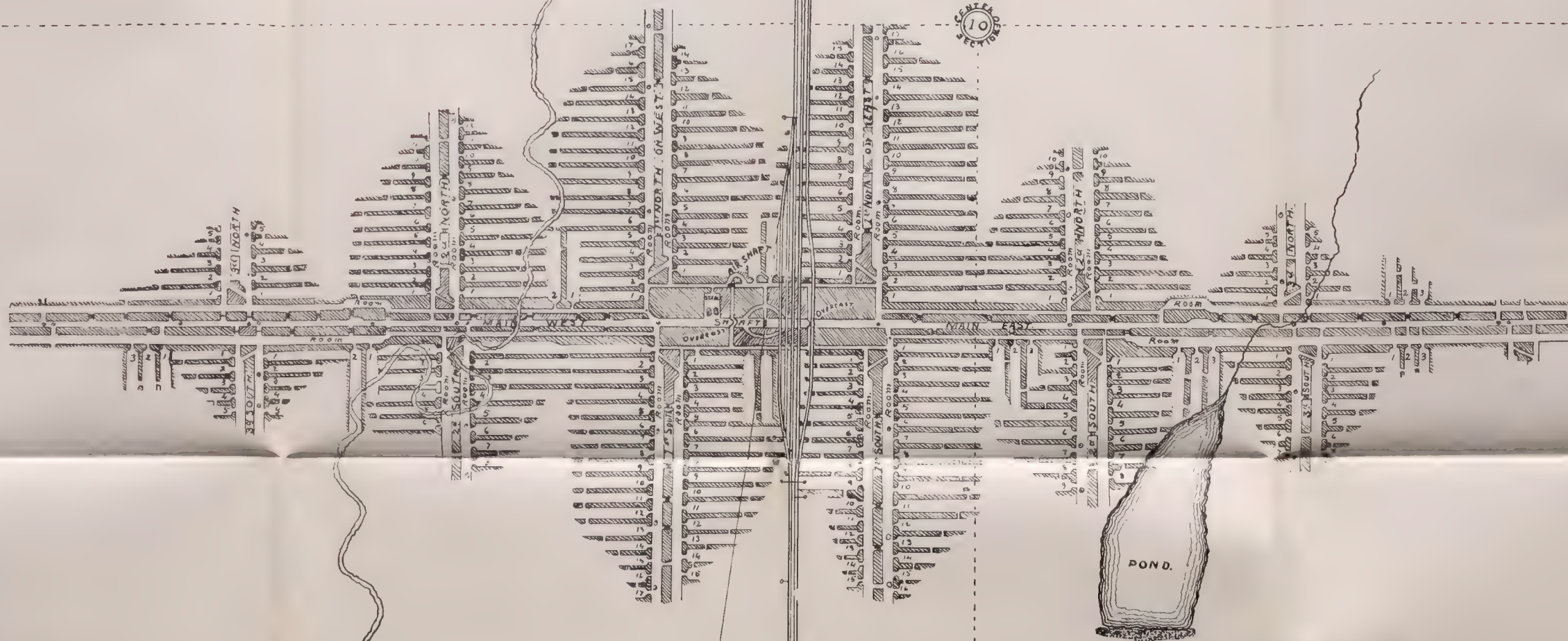
Mine No. 1 belonging to Wilson Bros. is located one-half mile north of Pittsburg, on street-car line leading to Frontenac. This is a shaft opening, with gin power, and at the time of the Inspector's visit was only working the south side of the mine. The main shaft is 10x12 feet; air-shaft, 4x6 feet; depth of shaft, 40 feet; average thickness of coal, 38 inches; smooth top and bottom, and black slate roof, and is an excellent quality of coal. There was only 4 miners and 2 day men

at work. The ventilation at this mine was in very poor condition, but a new air shaft was about completed at the south end of their work. Inspector urged the Wilson Bros. to hurry and make those connections; when they were made they would properly ventilate the mine, by conducting the air around the working-face; as it stood the air-courses were about lost. This is a local-trade shaft, and two-thirds of the year they have a market for all the coal they can mine. Richard Wilson, jr., mine boss.

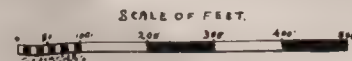
Mine No. 1 belonging to the Midland Coal and Smelting Company is located $3\frac{1}{2}$ miles west of Cherokee and connected with the K. C. F. S. & M. railroad. This is a new mine. Size of main shaft, 7 x 14 feet; air and pump shaft, bratticed off of main shaft, 2 x 7 feet; depth of shaft, 160 feet. One entry driven south, from 4 to 6 feet wide, 550 feet; same style of entry north 225 feet, east 300 feet; first west 25 feet, second west 111 feet. The average height of these roadways is $3\frac{1}{2}$ feet. This mine has been ventilated by a small fan forcing air into the mine through four- or five-inch tin pipes. This method of ventilation might work all right while sinking the shaft, but was not of sufficient force to ventilate four or five different working-places under the ground. Inspector informed W. E. Turkington, superintendent, that if he wished to continue on prospecting with the single roadway or entry he would have to adopt a better system of ventilation before he burned some of his underground employees. Mr. Turkington said he was going to shut the mine down and write to his company for permission to sink a new shaft, and make the one that was down now an air-shaft, the new one to be the main shaft; and if the company would not consent to this at the present time he then would erect a small fan over the part that was bratticed off for an air-shaft, which he thought would be sufficient until he tried to drive through the fault which the mine was sunk on. With all of the work done in this mine they have found but little coal, although it is claimed that they have got 40 inches of coal in some of their drill holes that they put down while prospecting. The miners who worked in the mine claimed that they had got enough coal part of the time to mine in, and then blast down the rock for height; also, it is claimed that it is looking better at the face of the south entry; there they found about 14 inches of coal, and about 14 inches of slate and rock mixed with a little coal, and when they stopped were up against what is known as a "horseback." It may be that they will find good coal, and the vein be thick enough to be workable, but at this time it looks slim; also, they have a 20-inch vein of coal, which is at about 30 to 35 feet depth, and is sometimes stripped in the creek bottoms where the surface is thin and the creek is low and dry in places; but this vein would be very wet, as it taps all of the surface-water, though it is a

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M A P
 Showing workings
 — of **MINE NO 7.** —
 Western Coal Mining Co.
 — FLEMING, KAN. —
 opened October 1896.
 Surveyed June 12-1898.



good quality of coal and free from horsebacks and other troubles. This company has also located and built here a good zinc-smelting plant, and should they find a good vein of coal it will be of immense value to them, as they will be able to use their own slack. It is to be hoped that in a short time they will drive their mine through the fault and find a good workable vein of coal. Later, this company is sinking two new shafts one-half mile east. James Clidgle, mine boss. W. E. Turkington, superintendent.

INSPECTOR OF COAL-MINES.

CRAWFORD COUNTY COAL-MINES.

[illegible]

(a) Missouri Pacific and Santa Fe.

CRAWFORD COUNTY COAL-MINES—CONTINUED.

Office No.....	TONS OF COAL PRODUCED. (2,000 pounds to the ton.)			Total number of tons of coal produced.	EMPLOYEES.											Total.....
	Lump.	Nut and slack.	Mine run.		Miners.....	Boys.....	Mule drivers and pushers.....	Cagers.....	Pit bosses, track- layers, roadmen.	Engineers, firemen, and pump men...	Wheemen and dumpers.....	Car trimmers and prop men.....	Blacksmiths and carpenters.....			
1	187,550	128,145	.....	315,695	335	3	30	4	31	3	1	12	2	421		
2	3,103	1,919	.....	5,022	150	1	8	2	10	3	2	4	1	181		
3	92,437	62,362	.....	154,799	200	3	12	3	11	3	7	7	1	247		
4	44,853	37,015	5,593	87,461	110	2	9	4	4	4	2	6	2	143		
5	42,138	37,277	4,120	83,535	110	2	9	2	4	3	2	6	1	139		
6	10,785	7,052	2,645	20,482	70	2	5	2	5	2	2	4	1	93		
7	.....	.....	5,353	5,353	4	.....	.....	.....	1	.....	.....	10	.....	15		
8	38,333	35,093	1,881	75,307	116	13	13	2	3	3	4	2	1	157		
9	2,815	2,177	892	5,884	40	.....	3	1	2	2	2	2	1	53		
10	38,227	30,512	18,835	87,574	138	2	9	3	5	4	2	3	1	167		
11	67,077	42,113	5,450	114,640	167	4	12	2	4	3	2	3	2	199		
12	30,875	30,286	10,923	72,084	176	2	4	2	3	3	1	3	2	196		
13	35,173	43,534	1,461	80,168	91	.....	.....	.....	.....	.....	.....	.....	.....	131		
14	32,680	33,562	10,674	76,916	114	.....	.....	.....	.....	.....	.....	.....	.....	156		
15	33,217	22,144	.....	55,361	75	.....	6	2	3	3	3	3	1	96		
16	2,675	.....	10,833	13,508	25	.....	.....	.....	.....	.....	.....	.....	.....	25		
17	48,901	47,415	3,720	100,036	150	4	12	2	2	3	2	4	2	181		
18	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
19	1,800	900	.....	2,700	12	.....	1	.....	1	.....	1	3	.....	18		
20	52	14	.....	66	3	.....	.....	.....	.....	.....	.....	2	.....	5		
21	120	80	.....	200	6	.....	1	.....	1	.....	1	.....	.....	9		
22	13,358	8,157	4,113	25,628	40	.....	4	1	1	1	2	1	1	51		
23	1,000	.....	.....	1,000	8	.....	.....	.....	.....	.....	.....	.....	.....	8		
24	9,900	100	.....	10,000	1	.....	.....	.....	.....	.....	4	.....	.....	5		
25	.....	1,600	.....	1,600	15	2	3	1	1	1	1	1	1	26		
26	11,330	11,330	.....	22,660	50	1	4	2	2	2	2	3	1	67		
27	.....	.....	99,373	99,373	135	2	12	2	4	2	3	4	1	165		
28	2,161	1,993	.....	4,154	16	.....	3	2	1	1	2	2	2	29		
29	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
30	.....	.....	25,000	25,000	6	1	1	.....	1	2	1	.....	1	13		
31	.....	.....	3,560	3,560	15	.....	2	.....	1	.....	1	1	.....	20		
32	.....	.....	8,000	8,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
33	9,955	9,036	1,788	20,779	45	4	5	2	2	1	3	3	1	66		
34			75	75	3	.....	.....	1	1	1	.....	.....	6			
35			12,000	12,000	50	.....	.....	.....	.....	.....	.....	.....	50			
36	760,615	592,216	237,789	1,590,620	2,476	48	168	41	104	50	54	89	108	3,138		

CRAWFORD COUNTY COAL-MINES—CONCLUDED.

Office No.	No. of kegs of powder used during the year	No. of days mine worked during the year	Av. price paid per ton for mining.		Estimated value of fixtures.....	Estimated value of mine.....	Casualties.		Average selling price of coal at mine.				Av. wages paid day man underground.	Av. wages paid day man over ground ..
			Lump	Mine run.			Killed	Injured....	Lump	Nut.....	Slack.....	Mine run.		
1	18,775	263	<i>Cts.</i> 92 $\frac{1}{2}$	<i>Cts.</i>	\$15,000	\$25,000	.....	.....	\$1 40	\$1 02	\$0 40	\$1 02	\$2 00	\$1 60
2	310	10	92 $\frac{1}{2}$	.....	.....	.....	.....	.....	1 40	1 02	40	1 02	2 00	1 60
3	9,250	222	92 $\frac{1}{2}$	.....	15,000	50,000	.....	3	1 40	1 02	40	1 02	2 00	1 60
4	4,394	225	92 $\frac{1}{2}$	.....	8,000	25,000	1	.....	1 40	1 02	40	1 02	2 00	1 60
5	5,216	234	.....	55	7,500	18,000	.....	1	1 40	1 02	40	1 02	2 00	1 60
6	1,099	78	92 $\frac{1}{2}$	.....	7,000	18,500	.....	1	1 40	1 02	40	1 02	2 00	1 60
7	112	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1 25
8	4,780	174	.....	55	500	10,000	1	2	.....	.....	.....	91 $\frac{77}{100}$	2 00	1 60
9	391	30	.....	55	1,000	10,000	.....	.....	.....	.....	.....	91 $\frac{77}{100}$	2 00	1 60
10	4,520	155	.....	55	2,000	12,000	.....	.....	.....	.....	.....	91 $\frac{77}{100}$	2 00	1 60
11	5,793	139	.....	55	1,500	12,000	1	.....	.....	.....	.....	91 $\frac{77}{100}$	2 00	1 60
12	4,412	184 $\frac{1}{2}$	.....	55	2,000	30,000	.....	3	.....	.....	.....	91 $\frac{77}{100}$	2 00	1 60
13	4,203	190 $\frac{1}{2}$	92 $\frac{1}{2}$	.....	10,000	5,000	.....	.....	.....	.....	.....	90	1 90	1 50
14	3,952	127	92 $\frac{1}{2}$	.....	10,000	11,000	.....	.....	.....	.....	.....	90	1 90	1 50
15	3,107	227	92 $\frac{1}{2}$	.....	8,000	10,000	.....	.....	.....	.....	.....	90	2 00	1 60
16	228	200	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2 00	1 60
17	6,115	176	.....	55	15,000	25,000	.....	.....	.....	.....	.....	1 02	2 00	1 60
18	.....	.....	.....	.....	5,000	7,000	.....	.....	.....	.....	.....	.....	2 00	1 60
19	200	.....	.....	55	1,000	1,000	.....	.....	1 25	.....	.....	1 00	2 00	1 50
20	3	17	.....	55	40	100	.....	.....	1 25	.....	50	.....	1 75	1 25
21	20	49	Pd. b y yd.	.....	1,500	3,500	.....	.....	1 25	.....	50	.....	2 00	1 50
22	1,200	275	.....	55	1,000	2,000	.....	.....	1 25	1 00	50	1 00	2 00	1 50
23	5	75	.....	.....	.....	.....	.....	.....	1 25	.....	.....	.....	.....	1 25
24	1	150	62 $\frac{1}{2}$	.....	100	1,000	.....	.....	1 25	.....	25	1 12 $\frac{1}{2}$	.....	1 25
25	150	50	.....	55	500	2,500	.....	.....	1 25	.....	.....	1 00	2 00	1 50
26	1,100	195	.....	55	5,000	30,000	.....	.....	1 25	90	40	90	2 00	1 60
27	6,408	241	92 $\frac{1}{2}$	.....	10,000	20,000	.....	1	1 40	1 02	40	1 02	2 00	1 60
28	308	163	.....	55	500	500	.....	.....	1 25	.....	50	1 00	2 00	1 50
29	.....	.....	.....	.....	500	500	.....	.....	.....	.....	.....	.....	2 00	1 50
30	75	125	.....	53	1,000	1,000	.....	.....	1 00	.....	50	1 00	1 75	1 50
31	.....	.....	.....	55	1,000	10,000	.....	2	1 25	.....	50	1 00	1 75	1 50
32	.....	.....	.....	.....	2,000	5,000	1	.....	.....	.....	.....	.....	2 00	1 60
33	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
34	1,095	158	.....	55	5,000	15,000	.....	.....	1 50	1 20	60	1 20	2 00	1 60
35	50	90	.....	.....	500	5,000	.....	.....	.....	.....	.....	.....	2 00	1 60
36	.....	105	.....	.....	3,000	5,000	.....	.....	1 25	1 00	30	1 00	.....	.....
	87,272	4,327	.....	.....	139,140	370,600	4	13	.....	.....	.....	.....	.....	.....

NOTE.—Number of mines leased by Commercial Coal Company, 2.

CHEROKEE COUNTY.

Cherokee county is at present, and has been for years, the second largest coal-producing county in the state, and is destined to be the first; and, to include its lead and zinc mines, would be to-day the largest mineral-producing county in the state. During the year 1897, 1815 miners, 71 boys, and 467 day men, making a total of 2354 employees, were given employment 162 days, and produced 1,061,409 short tons of coal, or 32.24 per cent. of the total production of coal in the state, valued at \$1,010,342.64 at the mine. Burned 65,894½ kegs of powder, valued to the miner at \$131,789, or 1,647,360 pounds powder; or one keg of powder for every 16 tons of coal mined. There have been three new shafts sunk in the last year, and three more will be sunk in 1898. The gross earnings of the miner of this county are \$315.28; the expense for each miner is enormous; from its different sources, as compared with his gross earnings, it is \$93.61, or 29.69 per cent. of his gross earnings, not counting in yard work, horsebacks, and room turning. His net earnings are \$221.67, or \$1.37 per day for the number of days the mine worked, or 71.19 cents per day for 310 days. Underground day man's gross earnings are \$324, or \$1.0452 per day for 310 days. Over-ground day man's gross earnings are \$259.20, or 83.61 cents per day for 310 days. From the face of these returns, the miner and mine laborer is entitled to a better wage than he now receives, in order that he may be able to feed and clothe and educate his family. Considering the hardships that are attached to his labor, he is entitled to a larger remuneration for it. It is the opinion of the Inspector that the operators ought to furnish the miner with the powder and other mine necessities at cost, and not charge him double price for what in reality ought to be furnished by the operators themselves. It is simply, from the face of these returns, giving 30 per cent. of the miner's wages for the privilege of mining coal, and then receiving less than 80 cents per day for his labor per year. It is true that the average number of days the mines worked was only 162; but usually the miners go to work the day following the one on which they hoisted coal to set props, lay track, and put their place in working shape, and be ready for the next day that the mine works, thereby working more days than the returns show.

RECORD OF INSPECTIONS.

Mine No. 8 belonging to the Central Coal and Coke Company is located southwest of Weir City and is connected with the K. C. F. S. & M. railroad. It gave employment to 150 miners, 3 boys, 22 underground day men and 14 over-ground day men for 195½ days during the year, and produced 112,266 tons of coal. This mine has been one of the most productive in this county, but is now fast drawing to a close,

as its workings are fast reaching the boundary lines. It is a shaft opening, with mechanical ventilation; equipped with a large hoisting engine of 45 horse-power; gravity and revolving screens; manway in main shaft; run-around at bottom of shaft for employees to pass from one side to the other without going under or over the cage. The Inspector traveled all over this mine, accompanied by John Jenkins, mine boss, and found the sanitary condition of the mine in many places upon the south side very poor. Just a few hundred feet from the bottom of the shaft anemometer recorded 17,000 cubic feet of air passing into the south side of mine per minute. The air in this mine was intended to be quartered, but was being lost by leakage upon the south side; instead of passing into face of workings and returning to upcast it was lost after passing the parting branch. I called Mr. Jenkins's attention to this fact, and he seemed to be surprised. He claimed that his air men had reported to him his air in good condition in that part of the mine; and upon further examination I found that the west quarter return airway was cut off by an accumulation of water in dip rooms, which shut off air-course. Mr. Jenkins at once ordered his men to open up a new air-course, and also made several other changes, all tending to better the condition of ventilation in that part of the mine. The Inspector came back three days after his first visit, and found everything in better condition. Mr. Jenkins also stated that in the future he would trust no man to look after his ventilation, but he would himself go over the workings at least once a week and see that his air men did not neglect their duties. In talking with the man in charge of the stoppings and air-courses and looking after the ventilation of the mine, the Inspector was told that he had more work than he could attend to; that upon days when the mine hoisted he had to work upon the road and assist in the getting out of the coal, thereby neglecting the work that was necessary to maintain ventilation. This air man also claimed that had he been left to attend to the ventilation and not been called off to do other work the Inspector would not have found that part of the mine in the poor condition that he did find it. Mr. Jenkins showed a great willingness to do what was right, and since then the Inspector has heard no serious complaint. The north side of the mine was in better sanitary condition, except inside cross-entries. These did not have a sufficient volume of air passing through them. Mr. Jenkins promised to attend to this matter by curtaining across the mouth of entry and rooms and forcing the air into the inside entry. Also, the Inspector finds that his air-shaft is too small; it was necessary, in order to handle the volume of air, to run the fan 125 revolutions per minute; thereby his fan was overworked in order to properly ventilate his mine, and when they were hoisting right lively the engine would run

a little short of steam, reducing the number of revolutions the fan was intended to run, correspondingly injuring the ventilation of the mine. John Jenkins, mine boss. George K. Mackie, superintendent.

Mine No. 5 belonging to the same company is located northwest of Weir City and connected with the K. C. F. S. & M. railroad. It gave employment to 100 miners, 1 boy, 15 underground day men, and 11 over-ground day men; worked 170 days and produced 78,868 tons of coal during the year. This is a shaft opening; steam power; mechanical ventilation. Size of main shaft, 7x12 feet; size of air-shaft, 6x8 feet; size of fan, 4x14 feet; manway in main shaft; speed fan operated, 80 revolutions per minute; depth of shaft, 65 feet. This mine is also equipped with a large hoisting engine of about 35 horse-power; gravity and revolving screens in use. Mine opened up on the double-entry system; main entries run north and south; average thickness of coal-vein, $3\frac{1}{2}$ feet. At the time of the Inspector's visit Mr. Archie Fulton, mine boss, was very sick and had been for some time, and William Fulton was discharging the duties of mine boss. The Inspector traveled all over this mine, accompanied by William Fulton, and found the sanitary condition in many parts of the mine very poor; the cause was the lack of doors in many places, and the lack of tightening up and putting in of stoppings, so as the air could be properly conducted to working-face. Inspector notified William Fulton to call Archie Fulton's attention to the same and to have this matter attended to. The Inspector met Mr. Fulton, and called his attention to the same. Mr. Fulton stated that the reason that his mine was in that condition was it was understood that the mine was about to be abandoned and that the south portion of the mine was to be worked from No. 6 shaft; that being the case, he neglected to properly keep up his air-courses; and, to make matters worse, they shut down No. 6 to do some repair work and sent a large number of the miners over to his mine, No. 5; but he would at once put two or three men to work, and have the stoppings put in, tightened up, and doors hung where needed, and bring the sanitary condition up to the standard necessary to properly ventilate the mine. Later the Inspector was informed that this work had been done and that everything was now satisfactory. Archie Fulton, mine boss. George K. Mackie, Superintendent.

Mine No. 6 belonging to the same company is located west of Weir City and connected with the St. L. & S. F. railway. It gave employment to 180 miners, 2 boys, 21 underground day men, and 15 over-ground day men; worked 140 days and produced 86,125 tons of coal during the year. This is a shaft opening; steam power; mechanical ventilation. Size of main shaft, 7 x 16 feet; size of air-shaft, 6 x 8 feet; depth of shaft, 80 feet; size of fan, 4 x 14 feet; speed fan operated, 60

revolutions per minute; manway in main and air-shafts. This mine is equipped with a large double hoisting engine of about 40 horsepower; both gravity and revolving screens in use. Mr. Scott, mine boss, stated that the company intended to put in shaker screens; later it is understood that they have done so. This mine is opened up on the double-entry system; main entries north and south, cross-entries east and west. Average thickness of coal-vein, 3 feet 10 inches. This mine is equipped with two overcasts at bottom of shaft. Air divided into four currents at face of main entries; run-round at bottom of shaft for employees to pass from one side of the mine to the other without crossing over or under the cages. Roads in mine in good condition. Mr. Scott, mine boss, accompanied the Inspector over the mine. The sanitary condition of the mine was good, so far as ventilation was concerned, but in some parts of the mine in the old workings the fire-clay in the bottom of the rooms slacked and heaved up, and became very warm and dry, absorbing all moisture, and gave off a sulphuritic gas, which when mixed in the air is poisonous and injurious to the health of the employees, and will make the men sneeze, and after they have worked in it a while have a hacking cough. The Inspector called Mr. Scott's attention to this matter, and told him that the way this poisonous matter was increasing and mixing with the air passing over the working-face it would be necessary to cut off the cross-entries with parallel main entries, and stop up all of these old workings and allow a portion of fresh air to pass down through them, and carry this poisonous matter to the upcast, not allowing it to mix with the pure air passing over the workings of the mine. In answer, Mr. Scott stated that he was now driving two new parallel entries, one north and the other south. The entries are being driven 12 feet wide and brushed 12 feet wide, and will be laid with double track, and are cutting off all cross-entries upon each side of west side of main shaft. The old cross-entries are driven in about 1600 feet; his new entries will cut all of these off and give him shorter haulage, and allow him to ventilate his working-face with pure, fresh air that will not have to travel through old worked-out rooms and air-courses which produce sulphur or sulphuritic acids, which destroy the air and make it poisonous to inhale. Otherwise, this mine is supplied with a good volume of air, traveling all through the mine. When these old works are cut off by the new parallel entries, and all openings stopped up tight around them but those necessary to let a small current of air pass through the old workings for the purpose of carrying off these poisonous gases which accumulate therein to the return airway and the upcast shaft—when these connections are made the sanitary condition of this mine will be in first-class shape. Mr. Scott, mine boss, seems to take a pride in having his air right up to the working-face. He said that it

did not cost any more money, time or labor to keep the air right up to the working-face or last break-through than to have it connected up 100 yards back and his men suffering for air. Inspector can agree with Mr. Scott, and wishes that every other mine boss in the state would try and think the same. All buildings around this mine are in good condition; all machinery in good condition, and equal to the capacity of the mine. Wm. Scott, mine boss. Geo. K. Mackie, superintendent.

Mine No. 7 belonging to the same company is located north of Scammon and connected with the K. C. F. S. & M. railroad. It gave employment to 233 miners, 6 boys, 30 underground day men, and 22 above ground; worked 230 days and produced 152,679 tons of coal during the year. This is a shaft opening; mechanical ventilation. Size of main shaft, $7 \times 15\frac{1}{2}$ feet; size of air-shaft, 6×8 feet; size of fan, 4×14 feet; depth of shaft, 90 feet; manway in main shaft; no manway in air-shaft; speed fan operated, 72 revolutions per minute. This mine is opened up on the double entry system; main entries north and south, cross-entries east and west; average thickness of coal-vein, 3 feet 8 inches. Inspector traveled over this mine, accompanied by Mr. Elliott, mine boss. At bottom of mine on south side a large volume of air was going into the mine; in west cross-entries on south side air was reasonably good; in east cross-entries of main south air was poor. The air seemed to be losing at the parting branch and returning to the upcast shaft. Mr. Elliott stated he would see that the volume of air was increased upon that side of the mine, but as he had heard no complaints from the miners he had thought it was all right. I told Mr. Elliott that probably the reason no complaint was made of late was that it cost a man his job to make a complaint sometimes, and in many places he is told that if he does not like the way things are done he can take out his tools. Mr. Elliott, replying, said that he did not treat his men that way, and if a man complained to him of not having sufficient air in his working-place that he would see to it at once. I then told him that this whole quarter of the mine needed an increase of volume of air and I hoped that he would see to it. In second south entry upon south side, known by the miners as the "little south," the air was in fair condition, but would be much better when doors were hung where curtains were now being used. On north side of main shaft, both east and west, sanitary condition was good; but while passing through the mines some of the miners called my attention to the fact that in case of fire there was no escapement shaft for the men to get out at, and about 300 men employed in this mine, and said that they had complained for some time, and had sent a committee to Mr. Mackie and told him about it, and asked to have an escapement shaft a little further away from the

engine-room, but it had never been done. I told the miners that I would see to it, and when I went on top and investigated matters closely I found the men were right. The air-shaft is close to the engine-house, with no manway in the air-shaft; and if an accident from fire did happen, hoisting shaft, engine-room and fan house were so close together there was too much danger to take any further chances; so I told Mr. Elliott his company would have to comply with the law and sink an escapement shaft, as the present air-shaft was too close to the engine-room and too small to admit a manway being put in it. Mr. Elliott stated that his company had been talking of doing so for some time, and would start at once and sink an escapement shaft at the end of main south entry. All roads in the mine in good condition. No boys under twelve years of age were allowed to work in the mines; all boys over twelve and under sixteen years must furnish a certificate showing that they had attended school three months out of the year. This mine is equipped with a large double hoisting engine of about 70 horse-power; gravity and revolving screens; buildings all in fair condition. Some weeks later, upon learning that the air-shaft was not sunk as had been requested, Inspector wrote a letter to Mr. Elliott asking him the cause of delay. Mr. Elliott answered that he did not know the cause of delay, but referred my letter to Mr. Mackie; also, Mr. Elliott stated that he had moved his smoke-stacks outside of the engine-room, reducing the chances of an accident from fire. The Inspector then waited upon Mr. Mackie and talked the matter over with him. Mr. Mackie at once agreed that there would be no further trouble from that source, as it had been their intention for some time to sink an air-shaft on the south side of their mine and put in a good manway or traveling road, so that it would be closer for the miners from Scammon to enter the shaft; but that they had been waiting on account of sinking the shaft at that particular point giving them trouble with water into some dip room, but that he would wait no longer and order the shaft sunk. The result is the shaft has been sunk, and makes a good escape and traveling way for the employees working in the mine. Chas. Elliott, mine boss. Geo. K. Mackie, superintendent.

Mine No. 1 belonging to Hamilton & Braidwood Coal Company is located northwest of Weir City and connected with K. C. F. S. & M. railroad. It gave employment to 90 miners, 5 boys, 12 underground day men, and 13 over-ground day men; worked 220 days and produced 62,519 tons of coal during the year. This is a shaft opening; steam power; mechanical ventilation. Mine is equipped with a large double hoisting engine of about 60 horse-power; gravity and shaker screens for screening coal. Depth of main shaft, 75 feet; size of air-shaft, 8 x 8 feet; size of main shaft, 7 x 13 feet; speed fan operated, 60 revolutions

per minute; size of fan, 4 x 14 feet; manway in air-shaft. This mine is opened up on the double-entry system; main entries north and south, cross-entries east and west; average thickness of coal-vein, 3 feet 6 inches. At the time the Inspector visited this mine they were working very little—only about one day per week—and many of the men had left on account of slack work and gone to other fields. Run-around at bottom of shaft for employees to pass from one side to the other without crossing over or under the cages. No boys hired under twelve years of age, and all boys over twelve and under sixteen years must furnish a certificate showing that they have attended school three months out of the year. The Inspector traveled all over this mine, accompanied by Mr. Dunn, air man, and found the sanitary condition of the mine in first-class shape. All roads in good condition. The greatest trouble seemed to be at this mine that the men did not have work enough to pay house rent and support their families. Stewart Hamilton, mine boss. John R. Braidwood, superintendent.

This company has leased its new mine No. 2 to the Kansas Commercial Coal Company for five years, and at present the mine is shut down, and has been for some time. Mr. Hamilton stated to the Inspector that this company intended to sink a new mine close to Mineral City, as it owns 250 acres of good coal land there, and he thought they would sink it some time this summer, and get in shape for their winter trade. John R. Braidwood, superintendent.

Mine No. 1 belonging to the Excelsior Coal Company is located southwest of Weir City; no railroad connections. It gave employment to 9 miners and 2 day men; worked 150 days and produced 2707 tons of coal during the year. This is a shaft opening, with horse-power, and is a local-trade mine, although they do ship some coal. Have railroad switch about a quarter of a mile from shaft, on K. C. F. S. & M. railroad. At the time of Inspector's visit it was working very little. Size of main shaft, 6 x 10 feet; size of air-shaft, 5 x 5 feet; average thickness of coal-vein, 44 inches; depth of shaft, 30 feet. The sanitary condition of the mine was fair. This mine had some trouble some time before the Inspector visited it on account of poor air, but they have now got it fixed up so the ventilation in the mine is in fair condition. Chas. Kemp, mine boss.

Mine No. 1 belonging to the J. H. Durkee Coal Company is located southwest of Weir City and connected with K. C. F. S. & M. railroad. It gave employment to 100 miners, 6 boys, 20 underground day men, and 20 over-ground day men; worked 214 days and produced 20,899 tons of coal during the year. This is a new mine; shaft opening; steam power; mechanical ventilation. This mine is equipped with a light single engine of about 30 horse-power; gravity and shaker screens in use. At the time of the Inspector's visit at this mine con-

nections were not all made. Fan had just been placed over the air-shaft; a large and roomy manway had just been completed in the air-shaft, which would be ready for use in two days at that time, for all workmen to descend into and ascend from the mine. Inspector found the sanitary condition of the mine in fair condition, except in one east entry off main south, and just as soon as all connections can be made and doors substituted for curtains the sanitary condition of the mine will be good. Mr. Harbottle, mine boss, and Mr. Hanley, air man, were making the changes and connecting everything up on the day of the Inspector's visit. Size of main shaft is 6 x 12 feet; size of air-shaft, 6 x 14 feet; a manway and pump shaft partitioned off of air-shaft; a Chinese pump in use. Size of fan, 4 x 12 feet; depth of shaft, 40 feet. The system the mine was opened up on was, main entries double, cross-entries single; a run-around at the bottom of the shaft for employees to pass from one side to the other without passing over or under the cage. Average thickness of coal-vein, 46 inches. This mine is equipped with self-dumping cages. Buildings were all in good condition. One new shell boiler 24 feet long, 48 inches in diameter, furnishes steam for the machinery. This company failed last March and is now in the hands of receivers; its liabilities were over \$60,000; also, they had in circulation, directly and indirectly, over \$1000 in scrip, on which it is not expected that one dollar will ever be realized. This scrip is held by the merchants and business men of Weir City. Ben Cox and Thos. Harbottle, mine bosses. Jos. Humble, superintendent.

Old Mine No. 1 belonging to the same company is located one-fourth of a mile west of the depot and connected with the K. C. F. S. & M. railroad. It gave employment to 80 miners, 4 boys, 15 underground day men and 9 over-ground day men for 100 days, and produced 29,439 tons of coal during the year. This mine was indefinitely closed down early in the summer; all track pulled out; all buildings and machinery removed. William Humble, mine boss. Joseph Humble, superintendent.

Mine No. 5 belonging to the same company is located northeast of Weir City and connected with the St. L. & S. F. railway. It gave employment to 20 miners, 2 boys, 4 underground day men and 9 over-ground day men for 60 days, and produced 5,227 tons of coal during the year. This is also a new shaft, sunk during the spring and summer of 1897; is a shaft opening; steam power; mechanical ventilation; equipped with gravity and shaker screens; a light double hoisting engine of about 30 horse-power; one steel cylinder boiler, 20 feet long by 44 inches in diameter; this furnishes steam for running machinery; machinery all in good condition. Size of main shaft, 6 x 16 feet. At the time of the Inspector's visit the air-shaft and the pump shaft

were partitioned off the main shaft. Size of fan, $2\frac{1}{2} \times 8$ feet; size of place partitioned off, 5×6 feet. William Humble, mine boss, stated to the Inspector that the company intended to sink an air-shaft upon the south side of the mine just as soon as south entry was driven far enough to make connection, and put a good traveling way in same. Later this air-shaft has been sunk. This mine is opened up on what is known as part double-entry system. Mr. Humble also stated that the intention was to come to the double-entry system in a very short time, if the mine would justify the same. As this mine was new there were several things not yet completed, but the sanitary condition was good. Mr. Humble showed a guarded interest to avoid accidents in every way, and in a few weeks, when his connections are all properly made and entries brushed, his mine would be in first-class condition. Average thickness of coal, 45 inches; coal hard and of a good quality. Depth of shaft, 45 feet. William Humble, mine boss. Joseph Humble, superintendent.

Mine No. 2 belonging to the Wear Coal Company is located west of Weir City and connected with the St. L. & S. F. railway. It gave employment to 56 miners, 7 boys, 9 underground day men, and 10 over-ground day men; worked 89 days and produced 21,760 tons of coal during the year. This is a shaft opening; steam power; mechanical ventilation. Size of main shaft, 7×14 feet; size of air-shaft, 6×10 feet; size of fan, 4×14 feet; speed fan operated, 60 revolutions per minute; depth of shaft, 96 feet; manway in main shaft. This mine is opened up on what is known as the single-entry system; main entries north and south, cross-entries east and west. Average thickness of coal-vein; 3 feet 8 inches. Inspector traveled all over this mine, accompanied by Lou. Myers, mine boss. At the time of his visit only part of the mine was being worked, on account of slack work. This mine is not opened up very extensively at present. The sanitary condition was good all over the mine, except two entries, face of which was 60 feet ahead of the air; cause was break-throughs in rooms not being cut through and connected up. Mr. Myers, mine boss, stated that the reason this work was not connected up in these entries was, the entry men turned the rooms, and as work had been very slack the entry men would widen the room enough to claim pay for room turning, and then they would work in the entry, so as to get a little yard work, thereby working ahead of the air, that they might make a few dollars extra. While this was the true condition of the case, the miner ought to have made his break-throughs; but there is a whole lot of cutting to be done to make these connections, and poor pay for it. This only goes to prove that the single-entry system is a very poor system, and ought to be abandoned as one of the old, worn-out systems of mining coal. Buildings and machinery

were all in good condition. No boys hired under twelve years of age, and all boys over twelve and under sixteen years must furnish a certificate showing that they have attended school three months out of the year. Lou. Myers, mine boss and bookkeeper.

Mine No. 23 belonging to the Kansas & Texas Coal Company, and leased by W. H. Barrett, is located northeast of Weir City and connected with the St. L. & S. F. railway. It gave employment to 90 miners, 5 boys, 13 underground day men, and 10 over-ground men; worked 220 days and produced 11,644 tons of coal during the year. (It is the opinion of the Inspector that the return made to him of the number of days this mine worked is a mistake, as the mine is credited with working 220 days and only producing 11,644 tons, and 90 miners supposed to be employed. That would only make a little over one-half ton of coal for each miner for the number of days the mine is credited with working, or about 33 cents per day for the 220 days.) This is a shaft opening; steam power; mechanical ventilation; equipped with light double hoisting engine of about 30 horse-power; gravity and revolving screens. Size of main shaft, 8x16 feet; size of air-shaft, 8x8 feet; size of fan, $4\frac{1}{2}$ x12 feet; speed fan was being operated per minute, 90 revolutions; manway in main shaft. This mine is opened up on the single-entry plan; main entries a part of the distance were driven double entry, and run north and south; all cross-entries are single entries. Inspector traveled all over this mine, accompanied by Mr. Thompson, mine boss, and found the ventilation of the mine in fair condition, considering the many disadvantages in maintaining ventilation. Curtains were hung at the mouth of rooms to force the air to the head of entry; these were found to be crippled more or less by a part of the curtain being torn down and the ventilation escaping; and at face of entries from one to two rooms found not connected up, and air at face of entry poor; in fact, the men who work the face of entry don't know what good air is, as they are from 40 to 60 feet ahead of the last room connection. This mine is also equipped with self-dumping cages; buildings were all in fair condition; roads in the mine are all very poor, on account of being so wet. Also, roof is very poor in this mine, and very wet, and it makes it hard to keep it up. No boys working in the mine under twelve years of age; all boys over twelve and under sixteen years must furnish a certificate showing that they have attended school three months out of the year. Also, in this mine there has been some trouble caused by men firing their own shots upon idle days; as there are air-shafts sunk several hundred feet from the main shaft, and they are connected with mine No. 47, they can slip in and out of the mine and no one know who fired the shot. Men who are very anxious that the mining laws should be very rigidly enforced take pleasure in violating the

mining laws themselves, and the Inspector could not make them cease violating the same until he urged the company to threaten them with discharge if they did not cease violating the shot-firing law. It was stated to the Inspector by Mr. Thompson, the mine boss, that when he had as many as 10 or 12 men doing company work on the entry roads he would fire shots for the men that came in upon idle days, but these same men would not wait for the company to do the shot-firing for them, but would do their own firing. Daniel Thompson, mine boss. W. H. Barrett, lessee and superintendent.

Mine No. 18 belonging to the same company, and also leased by Mr. Barrett, is located north of Weir City and is connected with the St. L. & S. F. railway. It gave employment to 125 miners, 10 boys, 16 underground day men and 13 over-ground day men for 230 days, and produced 138,559 tons of coal during the year. This mine is a shaft opening; steam power; mechanical ventilation; equipped with a light double engine of about 30 horse-power; gravity and shaker screens in use. Size of main shaft, 8 x 16 feet; size of air-shaft, 8 x 8 feet; size of fan, $4\frac{1}{2}$ x 20 feet; speed fan operated, 40 revolutions per minute; depth of shaft, 62 feet. This mine has three air-shafts; a manway in each of them; main entries north and south, cross-entries east and west, and is operated upon what is called single-entry system. Average thickness of coal-vein, 3 feet 8 inches. The area of this mine is very large, and the reason that these different air-shafts have been sunk is to ventilate the different parts of the mine. Buildings are in fair condition; a good run-around for employees to pass from one side of the shaft to the other; self-dumping cages in use; machinery in fair condition; roads in mine on south side in good condition, upon north side in very poor condition. This mine is also connected with Nos. 47 and 23, although No. 47 has been abandoned for some time, but still is used for pump shaft sometimes when water gets up in the mines. As much as 400 acres of land have been undermined by this mine. Cross-entries supposed to run east and west; they are not regularly so; they turn to miss horsebacks and faults. This mine is also equipped with an endless haulage rope for the full length of double track upon south side of mine, which handles from 15 to 25 mine-cars a trip. This is the best piece of work in connection with the mine, and the most profitable. The Inspector traveled all over this mine, accompanied by Mr. Duffey, the air man, and he finds after he leaves main entry, or one of these downcast shafts sunk on the prairie, that the air is usually light. All entries are from 50 to 90 feet ahead of the last break-through in room. At best it is hard to keep air traveling to the face by canvassing the mouth of rooms, with cars running in and out through these rooms. The result is, the air is usually lost before it gets to the working-face; and in this mine the opened-up

territory being so large, it looks like a mystery how they are able to keep a sufficient volume of air going into the mine to justify the men to work. The Inspector is satisfied that this mine, or any other opened up on the single-entry system, will never give entire satisfaction to employees or the company so far as ventilation is concerned. It will keep a man going with a roll of canvas under his arm all of the time from place to place; and very often before this curtain hanger gets off of one entry and onto another the canvas is torn down by a car passing through under it or rubbing against it, and he is needed back again where he left, and in all probability is needed in 50 other places at the same time; but he has not time to come back, and the inside men must necessarily suffer for air until this curtain hanger can come back again, all together making it very unsatisfactory to miners, bosses, and all other parties interested. Elsewhere I will recommend the abolishment of the single-entry system of mining coal. This mine has also been troubled with the same violation of law as at No. 23. It had become a custom here for men to fire their own shots upon idle days and it gave the Inspector a great deal of trouble in trying to have it stopped; and he met with little or no success until the company put up a notice that they would discharge the first man who fired a shot who was not a shot-firer. It seemed as though the pot was as black as the kettle—one would not tell on the other; and the territory of the mine was so large, with air-shafts scattered over different parts of the mine, that they could fire their shots and then sneak out, and if questioned about it would say they did not do it. Patrick Welch, mine boss. W. H. Barrett, lessee and assistant superintendent.

Mine No. 6 belonging to the Southwestern Coal and Improvement Company is located at Mineral and connected with the M. K. & T. railway. It gave employment to 150 miners, 8 boys, 20 underground day men, and 19 over-ground day men; worked 180 days and produced 70,834 tons of coal during the year. This is a shaft opening, with mechanical ventilation, and is equipped with a large double hoisting engine of about 120 horse-power; gravity and shaker screens for screening coal. Size of main shaft, 7 x 13½ feet; size of air-shaft, 6 x 7 feet; manway in air-shaft; depth of shaft, 126 feet; size of fan, 4 x 14 feet; number of revolutions fan operated per minute, 78; average thickness of coal-vein, 3½ feet. This mine is opened up on the double-entry system; main entries north and south, cross-entries east and west. The Inspector traveled all over this mine, accompanied by John Ryan, mine boss. Mr. Ryan was very willing to show the Inspector everything in connection with his mine. Inspector found the sanitary condition of the mine in all parts good; also roads were in good condition. This mine seems to have been sunk close to a fault,

and it has cost the company a great deal of time and money trying to drive through it. It seems to run parallel with main north entry. They have driven this entry several hundred feet, most of the way in fault, but at present have stopped it, and in the future they will drive parallel entries off east and west cross-entries upon each side of fault, as the mine otherwise seems to be in good coal and good roof. Inspector also finds that every morning a man goes down into the mine and visits every working-place, and makes a record of every room and entry upon a book kept for that purpose in weigh office for inspection of condition of mine by mine boss and miners. Their machinery and buildings are all of the best, and in good order. Air-shaft is spaced off a reasonable distance from engine-room, hoisting shaft, and all other buildings. This mine has two veins of coal. One is about 40 feet from the surface, has a good black slate roof over it, and a fire-clay bottom; thickness of this vein is from 22 to 24 inches; this vein is free from the usual clay seams or horsebacks that are scattered through the lower veins. This company has sunk a mine known as No. 8, and they are going to open up one-half of it on the long-wall system, and the other half on the room-and-pillar plan; they also intend to work machines in this mine, and run the same with electricity. They have put in extensive machinery for that purpose. I cannot say what success they will have, as at present the mine is new and not opened up much. John Ryan, mine boss. H. M. Reed, superintendent.

Mine No. 7 belonging to the same company is located at Mineral and connected with the M. K. & T. railway. It gave employment to 106 miners, 3 boys, 18 underground day men, and 12 over-ground day men; worked 180 days and produced 82,736 tons of coal during the year. This is a shaft opening, mechanical ventilation; equipped with a large double hoisting engine of 120 horse-power; gravity and revolving screens for screening the coal, and self-dumping cages. Size of main shaft, $7 \times 13\frac{1}{2}$ feet; size of air-shaft, $6 \times 6\frac{1}{2}$ feet; size of fan, 4×12 feet; speed fan operated, 64 revolutions per minute; depth of shaft, 105 feet; average thickness of coal-vein, $3\frac{1}{2}$ feet. This mine is opened up on the double-entry system; the mine is dry and the roads are in good condition. The Inspector traveled all over the mine, accompanied by Mr. Davison, mine boss. I might add that going to the mine Inspector met Mr. Reed, mine superintendent of the mines at this place. He went to the mine with me, showed me all over the pit top of the mine, and accompanied me down into the mine, and when there stated that he did not have time to go over the mine with me, but suggested to Mr. Davison that he show me everything in connection with the mine; anything that I may find that was not

right to so report it, as he wanted his men to have good air and every part of the mine to be made as safe as it was practicable to be done, no matter what it cost. The Inspector found the sanitary condition of the mine in first-class shape; every place well ventilated; doors all up in good shape but one, and that Mr. Davison said would be up next day, as he had just got cut through and connections made; and if I had been a day later in visiting his mine the third west door would have been up the same as the rest of the mine. Roof in this mine is generally good; machinery all of the best; buildings all in good condition. The self-dumping cage in use at this mine is among the best in use; scarcely a small piece of coal ever falls back into the shaft; the manway is in air-shaft; air-shaft is a reasonable distance from the rest of the buildings, which is a protection against fire from the other buildings. Jos. Davison, mine boss. H. M. Reed, superintendent.

Mine No. 1 belonging to Stone & Dixon Coal Company is located at Scammon. It gave employment to 17 miners, 2 boys, 1 underground day man, and 3 above-ground day men; produced 3240 tons of coal. This is a shaft opening; horse power. Depth of shaft, 26 feet; average thickness of coal-vein, 46 inches. Coal is of an excellent quality. This mine supplies local trade and ships some coal, which is loaded on smelter switch of K. C. F. S. & M. railroad. In summer time work is very slow on account of slack trade. James Stone, mine boss.

Mine No. 1 belonging to the J. C. Graham Coal Company is located northwest of Scammon and connected with the K. C. F. S. & M. railroad. It gave employment to 70 miners, 5 boys, 10 underground day men, and 11 over-ground day men; worked 125 days and produced 15,000 tons of coal. This is a shaft opening; steam power; equipped with gravity and revolving screens; has two openings; size of main shaft, 7 x 16 feet; air-shaft is 300 yards south of main shaft; size of air-shaft, 6 x 8 feet; manway in main shaft. Mine is opened up north and south; main entries are double-tracked; roads in fair condition; thickness of coal-vein, 3 feet 8 inches; mechanical ventilation; size of fan, 4 x 12 feet; speed fan operated, 60 revolutions per minute. In south side of this mine the sanitary condition was very poor. Mr. Zimmerman stated to the Inspector that he had only been in charge at this mine about four months, and that he had not had time to fix everything up; he also stated that when he took charge the mine was in a very bad condition, as the former company that operated the mine, and was known as Walters & Glenn Company, had worked this mine close upon two years, and had in their employ about 75 miners, and only 4 miners out of the 75 drove any entry. This company gouged out all the coal that they could without cutting horse-backs or clay veins, leaving the south side of the mine in a very poor

sanitary condition; there seemed to be no return airway. Mr. Zimmerman will have to cut some of those horsebacks and make a return for his air, which he agreed to do at once. The north side of this mine was in fair condition. Mr. Zimmerman had spent about \$200 brushing and making his airways; at the present time he had about 40 employees working for him, and 14 of those were brushing up rooms and driving entry. Mr. Zimmerman promised me that in three weeks' time he would have the south side fixed all right, as he intended going right to work making a return airway. Later the Inspector is informed that the connections are made. John A. Zimmerman, mine boss.

Mine No. 1 belonging to the J. R. Crowe Coal Company is located $3\frac{1}{2}$ miles north of Columbus and connected with the K. C. F. S. & M. railroad. It gave employment to 90 miners, 15 underground day men, and 12 over-ground day men; worked $153\frac{1}{2}$ days and produced 56,285 tons of coal during the year. This is a shaft opening; steam power; mechanical ventilation; equipped with gravity and revolving screens; a light double hoisting engine of about 40 horse-power for hoisting the coal. Size of main shaft, 6x8 feet; size of air-shaft, 6x6 feet; depth of shaft, 45 feet; size of fan, $2\frac{1}{2}$ x8 feet; speed fan operated, 80 revolutions per minute. System mine worked upon is double entry; back entries not brushed; all entries are driven 21 feet wide since the change in the company; a run-around at bottom of shaft for employees to pass from one side to the other without passing over or under the cage; manway in air-shaft; buildings all in fair condition; machinery all in good condition; one shell boiler 28 feet long, 40 inches in diameter, furnishes steam for the machinery. No boys hired under twelve years of age; all boys over twelve and under sixteen years must furnish a certificate showing that they have attended school three months out of the year. The Inspector traveled all over this mine, accompanied by John Judd, mine boss, and finds the sanitary condition of the mine fair, except one entry known as first west off of main south entry. This entry was worked upon the single-entry plan, and air was lost about four rooms back from entry. Mr. Judd stated that it had only to go about 60 feet further, and that he would see that all curtains were kept up, and the air close to the face. Entry roads in mine a little muddy; otherwise the sanitary condition of the mine fair. John Judd, mine boss; later, Ed. Kelley. W. H. Barrett, superintendent.

Mine No. 8 belonging to the Southwestern Coal and Improvement Company is located at Mineral and connected with the M. K. & T. railroad by branch from Labette. It employed 35 miners, 4 underground day men, and seven over-ground day men; worked 300 days

during the year and produced 6801 tons of coal. This is a shaft opening; steam and electric power; mechanical ventilation. Size of main shaft, $6\frac{1}{2} \times 13$ feet; size of air-shaft, $5 \times 5\frac{1}{2}$ feet; depth of shaft, 40 feet; manway in main shaft; size of fan, 3×10 feet; main entries run north and south. This mine was opened up on the room-and-pillar system, but at the time of the Inspector's visit north side was being changed to long-wall system; about 1200 feet of face opened up. Indications were that the long-wall system would be a success. It will work all right long-wall unless the breaks go to the surface and during the wet season surface-water works into the mine too free, and makes it too wet to work and causes the roof to cut off at the face of the coal. George Richardson, mine boss, stated that he believed the breaks would cement themselves and prevent the surface-water from coming into the mine, as there was about eight feet of black shale or slate over the coal, and he thought it of sufficient thickness to be worked successfully upon the long-wall system. This is the first experiment of the kind in this end of the state, and should it be a success other mines will follow same plan in top vein. The company pays \$1 per ton of 2000 pounds to miners in long-wall side; it produces about 95 per cent. lump coal, which is of excellent quality. On south side of mine they use an electric machine to mine the room; then the company pays the miner 55 cents per ton for shooting down and loading out coal; machine work makes about 50 per cent. lump coal. From present indications machine work will not be a success in this coal seam. It is costing the company about \$1 gross to mine coal with the machine, and it makes a less per cent. of lump coal than the miners make on the long-wall side of the mine. Unless some change for the better, the machine will soon play out. This is a new mine; only been in operation this year; buildings are all in the best of condition; gravity screens in use; run-around at the bottom of the mine for the employees to pass without going over or under the cage. No boys at work in this mine. Machinery all in the best of condition; one brace of steel boilers for furnishing steam; size, 18 feet long by 66 inches in diameter; 96 three-inch flues in each boiler; a double hoisting engine of about 50 horse-power; an electric-motor engine of about 150 horse-power. The sanitary condition of the mine was good. George Richardson, mine boss. Hugh Reed, superintendent.

CHEROKEE COUNTY COAL-MINES.

Office No.	Name of operator or company.	Post-office address.	Name or number of mine....	Name of pit boss or underground foreman.	Location of mine.	Has mine railroad connection?	Name of railway.	Kind of opening	Kind of power used	Capacity of engine, horsepower
1	Central Coal and Coke Co.	Weir City	5	Archie Fulton.....	N. W. Weir City ..	Yes.	Memphis,	Shaft,	Steam,	30
2	" " " " " " " " " " " "	"	6	Wm. Scott	W. Weir City....	"	Frisco	"	"	40
3	" " " " " " " " " " " "	"	7	Chas. Elliott.....	N. Scammon.....	"	Memphis,	"	"	70
4	" " " " " " " " " " " "	"	8	John Jenkins.....	S. W. Weir City ..	"	"	"	"	45
5	Hamilton & Braidwood Coal Co.	"	1	Stewart Hamilton ..	N. E. Weir City ..	No.	"	"	"	60
6	Excelsior Coal Co.	"	1	Chas. Kemp.....	S. W. Weir City ..	Yes.	Memphis,	"	Horse,	30
7	J. H. Durkee Coal Co.	"	1	Thos. Harbottle and Ben Cox,	S. W. Weir City ..	"	"	"	Steam,	30
8	" " " " " " " " " " " "	"	1	Wm. Humble.....	N. W. Weir City ..	"	Frisco	"	"	30
9	" " " " " " " " " " " "	"	5	" " " " " " " " " " " "	N. E. Weir City ..	"	"	"	"	30
10	Wear Bros. Coal Co.	"	2	L. S. Myers.....	W. Weir City....	"	"	"	"	60
11	Kansas & Texas Coal Co.* ..	"	23	Dan. Thompson.....	N. E. Weir City ..	"	"	"	"	30
12	" " " " " " " " " " " "	"	18	Pat. Welch.....	N. Weir City....	"	"	"	"	30
13	" " " " " " " " " " " "	"	3	Jos. Barrett.....	2 1/2 N. E. Weir City ..	"	"	"	"	30
14	John & Henry Jenkins Coal Co.	"	1	H. Jenkins.....	S. Weir City....	No.	"	"	Horse,	12
15	Joe Bennett Coal Co.	"	1	Wm. Kirby.....	S. Weir City....	"	"	"	"	12
16	W. H. Barrett Coal Co.	"	7	" " " " " " " " " " " "	N. W. Weir City ..	Yes.	Memphis,	Slope,	Steam,	120
17	Southwestern Coal and Imp Co.	Parsons	8	John Ryan.....	Mineral	"	M. K. & T.,	Shaft,	"	120
18	" " " " " " " " " " " "	"	7	Jos. Davison.....	"	"	"	"	"	40
19	" " " " " " " " " " " "	"	8	Geo. Richardson.....	"	"	"	"	"	40
20	W. H. Huntsinger.....	Mineral	"	W. H. Huntsinger ..	W. Mineral.....	No.	"	Strip,	"	40
21	Stone & Dixon Coal Co.	Scammon	"	H. W. Dixon.....	N. Scammon.....	"	"	Shaft,	Horse,	40
22	J. C. Graham Coal Co.	"	1	J. A. Zimmerman ..	N. W. Scammon ..	Yes.	Memphis,	"	Steam,	40
23	Geo. Robinson Coal Co.	Columbus	1	Jos. Robinson.....	N. Columbus.....	"	"	"	"	40
24	J. R. Crowe Coal Co.	Weir City	1	Ed. Kelley.....	N. Columbus.....	"	Memphis,	"	"	40
25	Kansas Commercial Coal Co.	Kansas City, Mo.,	"	" " " " " " " " " " " "	"	"	"	"	"	40
26	Columbus Coal Co.	Columbus	"	" " " " " " " " " " " "	"	"	"	"	"	40
27	Hamilton & Braidwood.....	Weir City	"	" " " " " " " " " " " "	"	"	"	"	"	40
28	" " " " " " " " " " " "	"	"	" " " " " " " " " " " "	"	"	"	"	"	40
29	All other producers, estimated.	"	"	" " " " " " " " " " " "	"	"	"	"	"	40

* W. H. Barrett, lessee. † New. ‡ Old. § Daisy. || Sixteen to One.

NOTE.—Graham Coal Co. made a clerical error of 21,000 tons of coal, and corrected the same after this table was closed, making it short 21,000 tons.

CHEROKEE COUNTY COAL-MINES—CONTINUED.

Office No.....	Tons of Coal Produced. (2,000 pounds to the ton.)			Total number of tons of coal produced.	EMPLOYEES.										
					Miners.....	Boys.....	Mule drivers and pushers	Cagers.....	Pit bosses, track- layers, roadmen..	Engineers, firemen, and pump men...	Weghmen and dumpers	Car trimmers and prop men.....	Blacksmiths and carpenters	Total.....	
	Lump.	Nut and slack.	Mine run.												
1			78,868	78,868	100	1	10	2	3	2	2	6	1	127	
2			86,125	86,125	180	2	15	2	4	3	4	6	2	218	
3			152,679	152,679	233	6	20	2	8	3	4	5	2	283	
4			112,266	112,266	150	3	15	3	4	3	4	6	2	190	
5	29,995	27,706	4,818	62,519	90	5	9	1	2	3	3	6	1	120	
6			2,707	2,707	9									9	
7	13,109	6,863	927	20,899	100	6	12	4	4	2	4	6	8	146	
8	19,454	8,591	1,393	29,438	80	4	11	2	2	3	2	3	1	108	
9	2,974	1,759	494	5,227	20	2	3		1	2	2	2	3	35	
10	11,272	9,130	1,358	21,760	56	7	5	2	2	2	3	4	1	82	
11			11,644	11,644	90	5	9	2	2	2	3	3	2	118	
12			138,559	138,559	123	10	12	2	2	3	3	5	2	164	
13			11,420	11,420	20	1	4	1	1		1	1		29	
14			3,421	3,421	7		1				1			9	
15	4,947	4,747		9,694	18	1	1	1	1	2	1	2		27	
16															
17		40,087	70,834	110,921	150	8	15	2	3	3	9	4	3	197	
18			82,736	82,736	106	3	12	3	3	2	5	2	3	139	
19		850	5,951	6,801	35			2	2	3	2		2	46	
20			2,000	2,000	10									10	
21	1,600	340	1,300	3,240	17	2			1		1		2	23	
22			15,000	15,000	70	5	7	2	1	2	3	4	2	96	
23	2,020	1,180		3,200	4		1				1			6	
24	20,999	17,352	17,934	56,285	90		10	2	3	2	3	5	2	117	
25															
26															
27															
28															
29			13,000	13,000	55									55	
	106,370	118,605	815,434	1,040,409	1,815	71	172	35	49	42	61	69	39	2,354	

CHEROKEE COUNTY COAL-MINES—CONCLUDED.

Office No.....	No. of bags of powder used during the year...	No. of days mine worked during the year.....	Av. price paid per ton for mining.		Estimated value of fixtures.....	Estimated value of mine.....	Casualties.		Average selling price of coal at mine.					Av. wages paid day man over ground.....	Av. wages paid day man underground.....
			Lump.....	Mine run.....			Killed.....	Injured.....	Lump.....	Nut.....	Slack.....	Mine run.....			
1	4,853	170	.....	\$0 55	\$8,000	\$10,000	.....	.....	\$1 30	\$1 00	\$0 30	\$1 00	\$2 00	\$1 60	
2	5,348	140	.....	55	10,000	25,000	.....	.....	1 30	1 00	30	1 00	2 00	1 60	
3	9,954	230	.....	55	12,000	30,000	.....	.....	1 30	1 00	30	1 00	2 00	1 60	
4	5,747	195½	.....	55	9,000	6,000	.....	.....	1 30	1 00	30	1 00	2 00	1 60	
5	3,121	220	.....	55	10,000	25,000	.....	1	1 40	1 02	40	1 02	2 00	1 60	
6	150	150	.....	55	200	200	.....	.....	1 25	1 00	30	1 00	2 00	1 60	
7	1,249	214	.....	55	5,000	8,000	.....	1	1 30	1 02	30	1 02	2 00	1 60	
8	1,512	100	.....	55	Mine worked out.	3,000	.....	.....	1 30	1 02	30	1 02	2 00	1 60	
9	302½	60	.....	55	4,000	3,000	.....	.....	1 30	1 02	30	1 02	2 00	1 60	
10	1,472	89	.....	55	4,000	30,000	.....	.....	1 35	1 02	35	1 02	2 00	1 60	
11	1,000	220	.....	55	.....	.....	.....	1	1 25	1 00	30	1 00	2 00	1 60	
12	12,000	230	.....	55	.....	.....	1	.....	1 25	1 00	30	1 00	2 00	1 60	
13	375	220	.....	55	5,000	25,000	.....	.....	1 25	1 00	30	1 00	2 00	1 60	
14	110	110	.....	55	300	1,000	.....	.....	.....	.....	.....	1 00	2 00	1 60	
15	360	189	.....	55	350	1,500	.....	.....	1 37½	1 05	50	1 05	2 00	1 60	
16	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
17	7,985	180	.....	55	20,000	30,000	.....	.....	.....	.....	.....	92	2 00	1 60	
18	5,960	180	.....	55	20,000	30,000	.....	.....	.....	.....	.....	92	2 00	1 60	
19	167	300	\$1 00	.....	25,000	35,000	.....	.....	1 20	.....	.....	.....	2 00	1 60	
20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2 00	
21	170	120	.....	55	500	800	.....	.....	1 25	60	.....	1 00	2 00	1 60	
22	937	125	.....	55	1,500	2,000	.....	1	1 50	1 00	40	1 00	2 00	1 75	
23	170	200	.....	55	300	500	.....	.....	1 50	.....	50	.....	2 00	1 60	
24	2,952	153½	.....	55	9,000	4,000	.....	.....	1 35	1 05	45	1 05	2 00	1 50	
25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
26	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
27	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
29	.....	115	.....	.....	.....	.....	.....	.....	1 25	1 00	30	1 00	.....	.....	
	65,894½	3,910	.....	.....	144,150	273,000	1	4	.....	.....	.....	.....	.....	.....	

NOTE.—Number of mines leased by Commercial Coal Company, 3.

OSAGE COUNTY.

This county produced 181,857 tons of coal, valued at \$300,974, and gave employment to 1462 employees for 124 days during the year. The different mine reports show a falling off of coal production in this county for the past few years, until now in the summer time the mines are practically shut down. The cause of this falling off may be attributed to three different causes: First, the coal-vein of Osage county is thin, averaging in thickness from 8 to 16 inches; the digging price is high as compared with other coal-fields in the state, and yet it is so low that the miner cannot make a decent livelihood by following mining. Second, the thicker coal-veins of southeastern Kansas come in large competition with the Osage coal-fields and all other small coal-fields in reach, as the cost of production is so much less and the quality of the coal is better. Third, the discriminations in favor of long hauls and against short hauls by the railway companies, from Missouri, Colorado, and southeastern Kansas, enables them to put coal on the market for less money than Osage county can. Nearly every operator that the Inspector talked with complained about freight-rates, and claimed that there were large discriminations. Many of the miners believed that all of their trouble was caused by the penitentiary coal coming in competition with Osage coal. This opinion was largely brought about by republican politicians and newspapers; they all joined in and claimed that the penitentiary coal-mine and its convict-produced coal was what was ailing the Osage county miner, and that the Osage county miner, according to the opinion furnished by these politicians, should vote against the administration and all of the reformed party. The republican politician had an eye to what he called business; the miner would soon have been forgotten. Now, if the penitentiary coal-mine was forever closed down, and these other evils existed, Osage county would gradually be falling off as a coal-producing county. If the miners will go back with the Inspector for about nine years, they will see that there were 130 openings of one kind and another in Osage county, and all worked about one-half time. The Mine Inspector's report for the year ending 1889, published in 1890, shows that Osage county produced 396,784 tons of coal, valued at \$807,802; and for the year ending 1897 Osage county had about 40 openings and produced 181,857 tons of coal, valued at \$300,974—showing a falling off in tons of 214,927, and in money value of \$506,828. Also, the miner was paid, about nine years ago, 5½ and 6 cents per bushel for mining; now he is paid from 4 to 5 cents. This shows that Osage county has been gradually going back in the coal industry. Now, for the year ending 1889, and reported in 1890, the penitentiary coal-mine produced 62,728 tons of coal, valued

at \$109,774; in 1897 the penitentiary produced 64,880 tons of coal, valued at the penitentiary mine at \$82,928.40. The Inspector brings these figures into this report to show that had the penitentiary mine not placed one bushel of coal upon the market, the Osage county coal-field would have gone down just the same in the production of coal. Inspector thinks that he has made this matter plain for any reasonable and unprejudiced man; that the increased development of the thicker and cheaper veins of coal marks each year a falling off of the Osage county coal production. This is helped by favorable freight-rates for long haul against higher freight-rates for short hauls. This brings about the very results that are fast absorbing the Osage county coal-fields, and all other small coal-fields that come in competition. Now, the Inspector is not in favor of convict coal coming in competition with free-mined coal, and will recommend elsewhere in this report that not one ton of convict coal be allowed to go upon the market outside of state institutions; also, the Inspector finds that a majority of the mines in Osage county are worked by just a few men, and in many cases only a part of the mine is being worked, as they do not work enough to keep the mine all open; as all of the mines in this county are worked upon the long-wall system, when work is slow it is hard to keep the face all open, as the company does not get enough money out of the work to pay the expense of keeping everything in the shape it ought to be; therefore, they only work a part of the mine at one time; and in quite a number of other mines the miners and the company share alike in the sales of the coal, and among the miners they do all the dead work when they have no sale for the coal. It is a continual struggle with the coal companies and their men to keep their heads above water, and many have given it up and abandoned the work. Quite a number of the coal companies in and around Osage City have pooled their coal interest in a coöperative way, for the purpose of reducing the expense and cost of selling coal by sending it all through one office, thereby saving a few cents on a ton of coal by reducing clerk hire and salesmen expenses. What success they will have will remain to be seen later. Also, another branch of good miners found that they could not make a living digging coal for the different companies; so they got together and discussed the matter of forming an exchange company, known as Osage City Labor Exchange, Branch No. 223, mine No. 1. This is a shaft opening, horse power, located one mile northwest of A. T. & S. F. railway depot, and worked upon the coöperative and exchange plan. The aims and intentions of the labor exchange are, a means to provide work for the unemployed, and also to have a just remuneration for their labor. About the beginning of May, 1897, these men got together and talked the

matter over of joining a general labor exchange, and in a few days they got together again and organized and asked for a charter, which was granted to this small company of men. They called it the Local Branch of Osage City, No. 223; they then secured the lease of 40 acres of coal land and went to work and sunk a shaft, and the results you will see by the report following. They had nothing financially when they started; all they had was their own muscle and determination; they have now arrived at a point which you might call success, by having as well-equipped a mine as there is in the county of the kind; and the following statement, which the Inspector received from this exchange will show progress each month: For the month of June, 1897, 8 tons, 360 lbs.; July, $224\frac{3}{4}$ tons; August, 333 tons, 350 lbs.; September, 647 tons, 100 lbs.; October, 852 tons, 280 lbs.; November, 1012 tons, 1270 lbs.; December, 1096 tons, 440 lbs.—making a total of 4174 tons and 300 lbs. of coal for seven months' work after they had got to the coal. This was valued at \$6887.55. The mine worked 157 days. They started work with 4 men, and in December had 30; giving 30 men full time from the start, they would have earned an average of \$1.06 per day. This is an example of what a few men can do without a dollar in money, using their labor for capital. The average selling and exchange price for coal at mine was \$1.65 per ton of 2000 pounds; the average price allowed the miner was \$1.25 per ton. If this exchange mine continues to increase for the next year, they will be the best-paid miners that work in Osage county, and, in fact, in the state. Peter Forsborg, mine boss. Geo. L. Thompson, manager.

Office No.,...

[illegible]

OSAGE COUNTY COAL-MINES—CONTINUED.

Office No.....	TONS OF COAL PRODUCED. (2,000 pounds to the ton.)			Total number of tons of coal produced.	EMPLOYEES.										Total.....
	Lump.	Nut and slack.	Mine run.		Miners	Boys.....	Mule drivers and pushers.....	Cagers.....	Pit bosses, track- layers, roadmen..	Engineers, firemen, and pump men...	Weightmen and dumpers.....	Car trimmers and prop men.....	Blacksmiths and carpenters		
1	1,541			1,541	42	5	2		1		1			51	
2	19,969			19,969	84	4	2	1	2		2			95	
3	29,372			29,372	101	6	2	1	3					115	
4	1,999			1,999	73	4			1		1			79	
5	4,263			4,263	65	6			1		1			73	
6	6,099			6,099	79	4			1		1			85	
7	19,606			19,606	121	10			2		2			135	
8	3,369			3,369	30				1		1			32	
9	884			884	56				2		1			59	
10	1,752			1,752	10				1		1			12	
11	4,110			4,110	17		1		1		1			20	
12	6,041			6,041	26		2	1	1		1			31	
13	2,000			2,000	10		1				1			12	
14	800			800	6				1		1			8	
15	834			834	14		1				1			16	
16	656			656	5		1				1			7	
17	1,797			1,797	15	4	2	2			1			28	
18	5,310			5,310	25	2	1	1			1			30	
19	3,015			3,015	30		2		1		1			24	
20	3,000			3,000	25				2		1			28	
21	420			420	10	2	1		1		1			15	
22	2,650			2,650	9				1		1			11	
23	25			25	3				1		1			5	
24	331			331	2				1					3	
25	4,174			4,174	30		3		2		1			36	
26	2,026			2,026	23						1			24	
27	5,578			5,578	28		2	1	1	1	1			34	
28	8,242			8,242	28	3	1		1		1			34	
29	700			700	4		1				1			6	
30	3,000			3,000	15		1				1			17	
31	200			200	3						1			4	
32	6,890			6,890	50	5	1		1		1			60	
33	1,022			1,022	8	2			1					11	
34	950			950	6	1			1		1			9	
35	2,271			2,271	30	3			1		1			35	
36	1,547			1,547	25				1		1			27	
37	2,222			2,222	9				1					10	
38	1,682			1,682	15	4					1			20	
39	3,510			3,510	6				1					7	
40	18,000			18,000	150									150	
	181,857			181,857	1,288	65	27	7	36	1	38			1,463	

OSAGE COUNTY COAL MINES—CONCLUDED.

Office No.	No. of bags of powder used during the year ..	No. of days mine worked during the year	Av. price paid per ton for mining.		Estimated value of fixtures.....	Estimated value of mine.....	Casualties.		Average selling price of coal at mine.				Av. wages paid day man underground.....	Av. wages paid day man over ground.....
			Lump	Mine run.....			Injured.....	Killed	Lump	Nut.....	Slack.....	Mine run.....		
1		20	\$1 15	.....	\$600	\$2,000	.....	.....	\$1 75	.....	.....	.....	\$2 00	\$1 75
2		144	1 00	.....	600	2,000	1	.....	1 55	.....	.....	.....	2 00	1 75
3		178	1 00	.....	600	2,000	.....	.....	1 55	.....	.....	.....	2 00	1 75
4		18	1 25	.....	600	2,000	1	.....	1 80	.....	.....	.....	2 00	1 75
5		42	1 25	.....	600	2,000	1	.....	1 80	.....	.....	.....	2 00	1 75
6		45	1 25	.....	600	2,000	1	.....	1 80	.....	.....	.....	2 00	1 75
7		120	1 25	.....	600	2,000	.....	.....	1 80	.....	.....	.....	2 00	1 75
8		96	1 25	.....	1,000	2,000	.....	.....	1 80	.....	.....	.....	2 00	1 75
9		141	1 25	.....	1,000	1,500	.....	.....	1 90	.....	.....	.....	2 00	1 75
10		71	1 25	.....	1,000	2,000	.....	.....	1 90	.....	.....	.....	2 00	1 75
11		153	1 10	.....	1,000	1,000	1	.....	1 59	.....	.....	.....	2 00	1 75
12		151	1 00	.....	500	500	.....	.....	1 54	.....	.....	.....	2 00	1 75
13		150	1 10	.....	250	2,000	.....	.....	1 60	.....	.....	.....	1 75	1 50
14	1	150	1 20	.....	200	200	.....	.....	1 75	.....	.....	.....	1 75	1 50
15	8	100	1 35	.....	500	500	.....	.....	1 80	.....	.....	.....	2 00	1 75
16		120	1 10	.....	75	300	.....	.....	1 60	.....	.....	.....	1 75	1 50
17	40	100	1 10	.....	300	1,000	.....	.....	1 70	.....	.....	.....	2 00	1 75
18	3	245	1 10	.....	955	1,000	.....	.....	1 60	.....	.....	.....	2 00	1 75
19	8	204	1 10	.....	800	1,200	1	.....	1 65	.....	.....	.....	2 00	1 75
20	5	175	1 10	.....	500	2,500	.....	.....	1 65	.....	.....	.....	2 00	1 75
21	3	30	1 10	.....	300	1,000	.....	.....	1 65	.....	.....	.....	2 00	1 75
22	6	250	1 25	.....	100	1,000	.....	.....	1 60	.....	.....	.....	1 75	1 50
23		30	1 62½	.....	100	200	.....	.....	1 80	.....	.....	.....	2 00	1 75
24		150	1 25	.....	100	200	.....	.....	1 70	.....	.....	.....	2 00	1 75
25	4	157	1 25	.....	800	800	1	.....	1 65	.....	.....	.....	2 00	1 75
26	1	75	1 25	.....	250	1,000	.....	.....	1 78	.....	.....	.....	2 00	1 75
27	1	150	1 00	.....	1,000	2,000	.....	.....	1 60	.....	.....	.....	2 00	1 75
28	1	183	1 00	.....	400	2,000	.....	.....	1 50	.....	.....	.....	2 00	1 75
29		200	1 00	.....	250	250	.....	.....	1 50	.....	.....	.....	2 00	1 75
30	1	150	1 10	.....	600	1,000	.....	.....	1 50	.....	.....	.....	2 00	1 75
31		50	1 10	.....	100	250	.....	.....	1 50	.....	.....	.....	2 00	1 75
32		200	1 25	.....	1,000	2,000	.....	.....	1 75	.....	.....	.....	2 00	1 75
33		68	1 10	.....	100	200	.....	.....	1 50	.....	.....	.....	2 00	1 75
34		150	1 15	.....	2,000	2,000	.....	.....	1 70	.....	.....	.....	2 00	1 75
35	2	150	1 25	.....	.....	.....	.....	.....	.....	.....	.....	.....	2 00	1 75
36	2	80	1 25	.....	500	1,000	.....	.....	1 70	.....	.....	.....	2 00	1 75
37		175	1 25	.....	500	500	.....	.....	1 75	.....	.....	.....	2 00	1 75
38		65	1 10	.....	500	1,500	.....	.....	1 50	.....	.....	.....	2 00	1 75
39	5	180	1 15	.....	100	200	.....	.....	1 50	.....	.....	.....	2 00	1 75
40		100	.....	.....	.....	.....	.....	.....	1 75	.....	.....	.....	.....	*2 25
	91	4,966	.....	.....	\$21,130	\$47,100	7	.....	.....	.....	.....	.....	.....	.....

* Man and team.

LEAVENWORTH COUNTY.

This county is at present gaining in its production of coal. In 1885 it stood in the fourth place upon the list of coal-producing counties, and produced 258,000 tons of coal. In 1886 it moved up to third place by producing 284,000 tons of coal. In 1897 it showed an increase of 83,141 tons over 1896, by producing 367,141 tons during the year, and gave employment to 570 free miners, 62 underground day men, 15 boys, 89 over-ground day men, making a total of 736 free employees. In addition, the penitentiary mine worked 192 convicts mining coal, 112 underground officers and day men, 32 officers and day men above ground, making a total of 336 employees in connection with the mine. The free miners produced 302,261 tons of coal; the penitentiary mine produced 64,880 tons of coal. The free mines worked an average of 183 days during the year, making a gross earning of \$424.50 per miner per annum, or a net earning of \$401.45; showing that the miners of Leavenworth county earned \$129.25 more money than the miners of Crawford county, which is the largest coal-producing county in the state. The reason for this large difference is, that the Leavenworth miners work more days during the year.

Mine No. 1 owned and operated by the Leavenworth Coal Company is located northeast of Leavenworth and connected with the Mo. Pac. and U. P. railways. It gave employment to 235 miners, 15 boys, 22 underground day men, and 29 over-ground day men; worked 194 days and produced 112,261 tons of coal during the year. This is a shaft opening, equipped with a large double hoisting engine of about 800 horse-power. The area of this mine worked out has been very extensive. In the last year they have abandoned more than half of the area, mostly on the north side of the shaft; they are now opening up on the east side, and getting ready to do very extensive work in that part of the mine. They have drawn back all of their machinery and rails out of the abandoned part of the mine. The nature of these mines is such that in a few years these old and abandoned works will be closed tight, all entries will gradually close together from side pressure, and bottom will heave up. This mine is equipped with the largest fan of any mine in the state; size of fan is 7 x 25 feet; speed of fan is 55 revolutions per minute; size of main shaft is 11 x 12 feet; size of air-shaft, 8 x 10 feet; depth of shaft is 710 feet to the vein of coal that is now being worked; a large and roomy run-around at bottom of shaft for men and cars to pass from one side to the other without going over or under the cage. This mine is worked upon what is known as the long-wall system; main entries east and west, but east side has not been worked very extensively; cross-entries north and south; cross-entries have been worked very extensively; main north over one

mile to face of workings, west and south about three-fourths of a mile. The buildings of this mine are old and somewhat worn. At the time of the Inspector's visit this company was building a new tower or pit head, out of large, heavy northern fir timber; when completed it will be one of the best in the state. This mine is also equipped with double-decked cages; four mining-cars of about 1800 pounds each when loaded can be placed upon the cage at one time; also the cages are equipped with safety catches and are attached to a large steel wire rope of about 15,000 pounds breaking strain. The screens in use at this mine are all gravity; machinery all in good condition; 12 boilers for furnishing steam, 6 with 44-inch heads, and 6 with 48-inch heads; two 16-inch flues in each boiler; lengths of boilers, 20 feet. No boys hired under twelve years of age; all boys over twelve and under sixteen years must furnish a certificate showing that they have attended school three months out of the year. At the time of the Inspector's visit there were 203 miners employed, 23 day men, 7 boys attending doors and other light day work, and 8 boys working on the coal-face with their fathers. This mine has three mine bosses, namely: John Dobson, east side; Grant Parker, south quarter of west side; and S. R. Lowrey (colored), west and north quarter. Each mine boss accompanied the Inspector through his division. Inspector finds sanitary condition of mine in good shape, except on east side; air upon that side light on account of just being opened up and connections for return air not made. Mr. Dobson stated to the Inspector that it would take about three or four months before these connections could be made, as their intention was to connect to the north and south part of the mine that was open; later Mr. Carr, superintendent, notified the Inspector that these connections were made, and that the air was as good upon the east side as any part of the mine. This mine is also equipped with mechanical haulage in the way of an endless rope operated by an electric power; this rope extends west 2200 feet; and they were making ready to put mechanical haulage in east side of the mine, operated by the same kind of power. The speed of the rope is very slow, but could not be otherwise with the style of cars in use, as an increase of speed would buck the cars off the track and cause no end of trouble and wreckage. Mr. Carr also informed the Inspector that they intended putting steamboats on the river, for the purpose of marketing their coal in Kansas City, Atchison, and other points. He complained greatly of transfer charges of railroad companies. For years it has been understood by the people of Leavenworth and other points over the state that this company was working under state land and mining state coal. The Inspector had a survey made of the same; elsewhere a copy of the Inspector's findings is given. John Dobson,

Grant Parker, and S. R. Lowerey, mine bosses. J. E. Carr, superintendent.

Mines Nos. 1 and 2 belonging to the Home-Riverside Company are located southeast of Leavenworth and connected with U. P., Mo. Pac. and A. T. & S. F. railways. They gave employment to 335 miners, and 100 day men over- and underground, at both mines. Mines worked an average of 230 days; produced 190,000 tons of coal during the year. These mines are both equipped with large double hoisting engines; both shaft openings; mechanical ventilations; gravity screens in use at both mines; buildings in fair condition. At No. 1 mine, size of main shaft is 9 x 14 feet; size of air-shaft, 4 x 9 feet; air-shafts in both mines are bratticed off main shafts; depth of shaft, 712 feet; size of fan, 8 x 22 feet; speed fan operated, 50 revolutions per minute. Both of these mines are connected with a tunnel 3000 feet long. Should an accident occur from fire or other causes the employees could get out through the other mine. Both of these mines are opened up and worked upon what is called the long-wall system. Average thickness of coal-vein, 22 inches. There is also a 14-inch vein above the one now being worked, and 170 feet below the vein now being worked there is a 25-inch vein, and without doubt in due time this lower vein will be worked. Main entries east and west; slant entries from 60 to 65 degrees east and west of north and south; a large and roomy run-around for employees to pass from one side to the other without passing over or under the cages. Roads are all in good condition. No boys are allowed to work in the mine under twelve years of age, and all boys over twelve and under sixteen years must furnish a certificate showing that they have attended school three months out of the year. The Inspector found the sanitary condition of this mine in fair condition except upon the two last return entries; these were very smoky, and could be improved; otherwise the mine is practically in good condition.

Mine No. 2 is practically the same as mine No. 1 except in size of shaft and fan, and two boilers less than No. 1. Four boilers 44 inches in diameter, length 22 feet; two 16-inch flues in each boiler. No. 1 has six boilers of the same dimensions and kind. Size of No. 2 main shaft is 10 x 14 feet; air-shaft, 4 x 10 feet; size of fan, 3½ x 12 feet; speed fan operated, 60 revolutions per minute. The Inspector was accompanied by mine boss, Mr. Thomas Graham, in going through mine No. 2. This gentleman stated to the Inspector that he wanted him to see every part of the mine, and that anything that was not right in connection with his ventilation he (Graham) would see that it was attended to at once. The Inspector found the sanitary condition good in all parts of the mine that were being worked, and all air-

courses along the parts of the mine that were not being worked were generally kept open. Inspector also noticed that not more than one-third of the timber was used upon entry roads in No. 2 that was used upon entry roads in No. 1; and the entry roads in No. 2 seemed to be in first-class condition and mine working full time at the time of Inspector's visit. John Patterson, pit boss mine No. 1; John Graham, pit boss mine No. 2. Geo. W. Keirstead, superintendent.

Mine No. 1 known as the state penitentiary mine, located at Lansing, is connected with the U. P., Mo. Pac. and A. T. & S. F. railways. It worked 192 convicts mining coal, 112 convicts and officers at underground day work, and 32 officers and convicts at day work above ground in connection with the mine. Mine was in operation 310 days during the year, and produced 64,880 tons of coal. This mine is shaft opening; steam power; mechanical ventilation; equipped with two double hoisting engines, one upon each shaft. The horse-power of the engine on the main shaft is 750, and a first-motion engine; the horse-power upon the air-shaft is 150. Size of main shaft is 10 x 15 feet; size of air-shaft, 7 x 12 feet; depth of shaft, 715 feet; size of fan, 4½ x 16 feet; speed of fan, 55 revolutions per minute; 8 boilers with two 16-inch flues in each boiler to furnish steam for all machinery. Machinery all in first-class condition. Cages are connected with a heavy steel rope and fitted with safety catches. The mine is opened and worked upon the long-wall system. The Inspector traveled all over the mine, accompanied by Mr. John Gray, superintendent, and David Casselman, mine boss, and found the sanitary condition of the mine good; all roads and air-courses in good condition. Mr. Gray pointed out to the Inspector from time to time where a great amount of labor had been done since he came in charge in widening entry roadways and walling them up, and in the rebrushing and cleaning out of the air-courses. The circulating volume of air is very much increased, making the sanitary condition much better and more healthful for the men employed. Mr. Gray also makes the following statement, that in the Ninth Annual Report of the State Mine Inspector the statement was made that a new air-course was made in the penitentiary mine. This same air-course has been extended considerable, and now by actual measurements this air-course does not reach the number of feet in length that was given in that report. The main north entry has been widened and double track extended for a considerable distance, and this by actual measurement does not reach the figures reported by Mr. Gray's predecessor. Mr. Gray and all of his underground officers are using every means and spare no labor or time to bring the mine up to the best possible sanitary condition available; also they have done a lot of re-

pair work in timbering main shaft in weak places. The Inspector feels justified in recommending that the main shaft ought to be re-timbered with good, heavy timber, and asks that the next legislative body appropriate sufficient money to buy the timber and have the same done. Also, as this mine has two fire-clay veins between the coal-vein that is now being worked and the surface, one five feet thick and one three feet thick, and it is understood to be a good quality of fire-clay, and as the convicts must be worked, in order to take them from coal-mining and reduce the number engaged thereat to those necessary to produce the coal for state institutions that are in reach and for use at the penitentiary, that these clay veins or one of them be opened up and the clay be used for making fire-brick and tiles. As there are no fire-brick works in this state, there would be no one to find fault by the state using a part of its convicts making brick, and that would put an end to the howl that usually is made by politicians about penitentiary coal coming in competition with free-mined coal, as this argument was used largely in the Osage district last fall. The Inspector believes this clay can be utilized by dumping a few thousand tons of it on the ground for a few months, for it to air-slake, and then burn a part of it for use in mixing with the clay that is being made up into brick. In so doing I believe it will make good fire-brick and tile, as in its raw shape it would be too rich. If this can be done, it is one way to stop production of coal by convict labor to be sold against free-mined coal, in the absence of something better. Mr. Harry Landis, warden of the penitentiary, spoke to the Inspector about it some time ago, and is very anxious for something to be done along this line, and in all probability will recommend something of this kind for working the convicts in the summer time. Now, if this or something better cannot be done, the Inspector feels justified in asking the next legislature to amend the present law governing the disposition of the penitentiary coal so as not one ton of coal can be placed upon the market outside of state institutions and for use at the penitentiary. David Casselman, mine boss. John Gray, superintendent. Harry Landis, warden.

BOURBON COUNTY.

This county produced 28,483 tons of coal, and gave employment to 200 men a part of the year. It is very hard to gather the coal statistics of this county, as the coal is produced from strip pits and drifts in and around Fort Scott. Many farmers open a strip pit to get coal for their own use, and then haul and trade the balance off to any one who will buy it at Fort Scott; and then some man will come along, and drift from the strip pit into the hill and produce a little coal, and sell

it to teamsters who will haul it to Fort Scott, and stand around the city scales until they find buyers. The miner pays one cent per bushel royalty for this privilege, and keeps no record of his coal, and in this way about 100 or more miners are producing some coal; farmers and teamsters haul it to Fort Scott. The Inspector was under obligations to the city clerk for the privilege of access to the city scale books, for the purpose of figuring the amount of coal that was sold; and after about three days' hard labor he found the following results: Copied from city market scales, 15,738 tons; east city scales, 960 tons; south-east city scales, 825 tons; Yeakel city scales, 960 tons; cement works belonging to C. A. Brockett, 2400 tons; George Lamping, coal dealer, estimated the amount that he bought up was 1000 tons; D. P. Thomas cement works, 3200 tons; all other outside production that was not hauled to the city and weighed, but was consumed by farmers and others outside and around Fort Scott, estimated at 3400 tons — making a total production of 28,483 tons, valued at \$56,966. There is no practical method of mining. Every one is his own boss; it is a kind of go-as-you-please affair. Mines have no railroad connection. Average thickness of coal-vein now being worked is from 9 to 12 inches. Many who mine coal one month are doing something else the next, making it almost impossible to make a record of them. The average selling price is claimed to be about 8 cents per bushel.

LINCOLN COUNTY.

This county produced 750 tons of the lignite coal, valued at \$2250, and gave employment to 21 employees for about 98 days during the year. The kinds of openings are shafts and drifts; horse power is used. The mines are located northwest of Denmark, and nine miles south of Lincoln. The principal operators are A. T. Bureman and L. P. Nelson, who operate shafts northwest of Denmark, and C. McDanna and Mike Garity, who operate drifts south of Lincoln. Natural ventilation used; both long-wall and room-and-pillar systems. Depth of shaft, 45 feet; thickness of coal-vein, from 19 to 27 inches; price paid per ton for mining, \$2; selling price of coal at mine, \$3; size of main shafts, 4x10 feet; size of air-shafts, 2x4 feet. This coal is a very poor quality of lignite coal, and if it were in Cherokee or Crawford counties it would be thrown into the dirt dump. These mines are only worked in the fall and winter. The miners are usually their own bosses, and go and come when they please. The man who owns the ground and mine usually furnishes the horse and the necessary fixtures for hoisting the coal; he hoists the coal and sells it, and in the summer time works his farm. If the mine is not in good shape after standing idle during the summer, the next fall they sink another

hole in the ground and open up a new mine, and sometimes they tap into the old mine from the new one for an air-shaft. A small scale and a dugout constitute the improvements on top at the mine. The miners do very well for about three months and then they take to other work.

SHAWNEE COUNTY.

This county does not produce very much coal. Its mines are located west of Topeka. They produced 750 tons of coal, valued at \$2146, and worked an average of 89 days during the year; gave employment to about 20 employees. The mines are all shaft openings and worked upon the long-wall system, and leased, owned and operated by W. A. Eaton & Son, D. L. Heaton, and W. E. Porter; these are the principal operators. They stated to the Inspector that no Inspector had paid them a visit since John Braidwood's time. The average depth of this coal is 35 feet; the thickness of coal-vein, 10 inches; local trade and no railroad connections. Some of the miners who work in these mines stated that in the summer time they work in the brick-yards. There are but very little improvements in connection with these mines—a small shanty, a wagon scale, air-shaft in one corner of main shaft. The area of the mine is usually small, just around the bottom of shaft; when their air gets a little bad they usually sink a new shaft, as they claim it is cheaper to sink a new shaft than to spend money trying to systematize their mines.

DOUGLAS COUNTY.

There was a mine sunk at Lawrence by the Black Diamond Coal Company. The Inspector, upon inquiring for the same, received the following communication:

LAWRENCE, KAN., January 31, 1898.

Geo. T. McGrath, Weir City, Kan.:

DEAR SIR—Yours of the 29th to the Deer Creek Coal and Mining Company has been handed to me. Will say that the work at mining coal which you have reference to was stopped some time ago, and in all probability will never have anything more done to it. There was a little coal taken out last fall, mostly by stripping; though a shaft was sunk 30 feet, it was found that the roof was not good enough to enable any work to be done in that way. No one is in charge there now, but as we sold some of the coal this was handed to us.

Yours truly, J. C. THOBURN.

FRANKLIN COUNTY.

This county produced 6452 tons of coal, valued at \$12,097, and gave employment to 59 employees for 102 days. The openings are principally shafts and drifts, located in and around Ransomville. Horse power in use. The principal operators are as follows: Newt. Davall & Co., J. H. Ransom and James Simms Company, J. N. Dyer,

Geo. H. Capa, jr., and John Eddy. The price paid to the miners is from \$1.15 to \$1.25 per ton; the average selling price of coal at mine is \$1.87½ per ton; average thickness of coal-vein, 14 to 16 inches; average depth of mine, 35 to 50 feet. Some of the old mines have been closed down, owners claiming that it did not pay to bother with coal-mining in that part of the country any more. Only one of these mines has railroad connections; principally local trade, in fall and winter.

LYON COUNTY.

This county produced 835 tons of coal, valued at \$1878, and gave employment to 19 employees for 62 days during the year. Principal operators are: Geo. Hendrickson & Bro. Company, T. S. Kelley, and J. M. Fry. The mines are located in and around Neosho Rapids. They are shaft openings; natural ventilation; horse power used; no railroad connections. Local trade, fall and winter.

ELLSWORTH COUNTY.

This county produced 1427 tons of coal, valued at \$4281, and gave employment to 27 employees for 110 days during the year. The openings are drifts, and worked upon the long-wall system. The average thickness of coal-vein is from 12 to 14 inches. The names of the principal operators are as follows: L. Conrad Coal Company, C. W. Kelley Coal Company, and F. M. Lingo & Co. These mines are located around Nelson. The miner is practically his own boss. He receives \$2 per ton for all coal he mines and pushes out on the dump. The selling price of coal at mine is \$3 per ton. These mines have no railroad connections, and their trade is principally local, in the fall and winter.

ELK COUNTY.

This county produced 320 tons of coal; gave employment to 5 men for 60 days during the year; coal valued at \$800. The Inspector was only able to find one operator in this county, and that mine is owned and operated by C. P. Jenks; post-office address, Howard, and location of mine southwest of Howard. Shaft opening; horse power; no railroad connections; local trade. Price paid for mining, \$1.75 per ton; average selling price, \$2.50.

RUSSELL COUNTY.

This county produced 181 tons of coal, valued at \$543, and gave employment to 12 employees 50 days during the year. The average price paid miner for mining coal is \$2.37½; the average selling price of coal at mine is \$3 per ton. This is a slope opening; horse power; and the mines that are in operation are located northeast of Bunker Hill. Two or three companies that formerly operated mines in this

county have gone out of the business. Mines have no railroad connections; trade is local, and only work a few days in the fall and winter. The average thickness of the coal-vein is 12 inches.

ATCHISON COUNTY.

This county produced 5152 tons of coal, valued at \$12,880; gave employment to 49 employees for 205 days during the year. There are only two mines operated in this county, and they belong to the Geo. Jones Coal Company and W. T. F. Donald Coal Company; post-office, Atchison. They are worked upon the long-wall system, and both mines are drifts. Thickness of coal-vein, from 10 to 12 inches. The mines are located $2\frac{1}{4}$ miles south of Atchison depot. The miner receives \$1.15 per ton in summer and \$1.50 in the winter time. Selling price of coal at mine is from \$2.25 to \$3 per ton, summer and winter. At the time the Inspector visited this mine they were having some trouble with the water. It seems that Mr. Jones dumped a good deal of dirt into a cañon just below the mouth of his drift, and during a rainy spell a large volume of water came down this cañon; the dirt obstructed the water passage and dammed it back, causing the water to get into his mine; and as he had holed through into the Donald mine's old workings the result was it flooded both mines; and as the bottom is clay and the air-courses low the bottom heaved and closed them up, so when they got the water out of the mines they then had to make air-courses. The extra expense that both companies has been put to is sufficient to guard against the recurrence of the same accident. Mr. W. T. F. Donald has spent a lot of money and time trying to make his mine a success, by trying to work the Independent electric long-wall mining machine. Two of these machines were built by the Link-Belt Machine Company, of Chicago, but they were not able to do the work for which they were built, and had to be taken out. W. T. F. Donald, the operator, contends that the Independent electric machines were not constructed according to mechanical principles, or they would work. Wm. Donald is now at work, with J. M. Hendershot, an expert in that line, on a machine which they think and feel sure will be a great success. This new machine will not be ready for trial before spring. While Mr. Donald has spent \$6000 or \$7000 along this line of experimenting, the Inspector is satisfied from what he has already seen, not only there but in other places, that the coal is too low to be worked profitably with a machine. Also, I think Mr. Donald could have placed his money to better advantage had he sunk a shaft to the lower vein—the vein that is now being worked at Leavenworth and Lansing. Mr. Donald's mine is connected with the Mo. Pac. railway; in addition to that, he has good city trade for all of the coal that he is able to

mine, and could dispose of several hundred more tons of coal. James Maynard, mine boss for the Jones Coal Company; Alex. Ramage, mine boss for the Donald Coal Company.

LINN COUNTY.

This county produced 26,775 tons of coal, valued at \$29,452, and gave employment to 95 employees 148 days during the year. There is actually only one *coal-mine* in this county, although there are four others. One mine produced 25,932 tons of coal; all of the others produced 843 tons. The Mine Creek Coal Company is located 2½ miles east of Pleasanton, on the Butler & Fort Madison branch of the Mo. Pac. railway. It is a shaft opening; steam power; mechanical ventilation; long-wall system of work; size of main shaft, 5 x 13 feet; size of air-shaft, 6 x 12 feet; depth of shaft, 90 feet; size of fan, 3 x 8 feet; speed fan operated, 60 revolutions per minute. This mine is equipped with gravity screens; only makes two grades of coal—lump and slack; 65 per cent. of the output of the mine is lump coal, 5 per cent. is slack. At the time of the Inspector's visit to this mine there was no manway in either shaft. In case of accident by fire or by machinery breaking there was no way for the miners to get out except by climbing the buntings, and as this was in violation of the mining law the Inspector notified Mr. Brown, the mine boss, that he would have to put in a manway. No boys allowed to work under twelve years of age, and all boys over twelve and under sixteen years have to furnish a certificate showing that they have attended school three months out of the year. All roads in good condition; all machinery in good condition; one double-flue boiler, 40 inches in diameter, 28 feet long; a light double hoisting engine of about 32 horse-power. Overcast upon north side of main shaft; size, 5 x 6 feet; southwest quarter of the mine has not been worked for the last four years; air-course in southeast quarter cut off by a break in roof at face of sixth room back from face of first east entry. Mr. Brown, mine boss, stated to the Inspector that he would have the same connected and opened up, as he had miners at work on both sides of the break pushing about a four-foot face around the break; otherwise the sanitary condition of the mine was good. Mr. Brown states that there are about 200 square miles of land in this county underlaid with two veins of coal, at from 60 to 90 feet deep. The quality of this coal is not quite as good as that in the southeastern part of the state. The price paid the miner is 75 cents per ton, mine run, and it costs as much to ship this coal to market as it does that from Cherokee and Crawford counties. Could this coal-field receive the benefit of a less freight-rate, which would give them about 15 cents per ton, it would only be a short time until this county would be an extensive coal-field, as the operators then could compete

with other coal-fields in this state and Missouri. During the last three years there have not been in operation, on account of the low price of coal, the Bradley-Vernon Coal Company's shaft, located at Boicourt, the Pleasanton Coal Company's shaft, the Gage Brothers' shaft, the Ben Good shaft, and some others that, while still existing, are as good as closed down indefinitely. Geo. S. Brown, mine boss.

CLOUD COUNTY.

This county produced 2800 tons of coal, valued at \$6300, which gave employment to 27 employees for 106 days during the year. The mines are shaft openings; horse power; have no railroad connections; are located $4\frac{1}{2}$ miles from Minersville. The mines are principally leased, and they pay as high as 20 cents per ton royalty. The digging price is \$1.60 per ton; selling price is \$2.25 per ton; local trade; and only work in fall and winter season. T. Struthers and — Woodward, mine bosses.

COFFEY COUNTY.

The mines in this county are strip pits, and located at Lebo. The principal stripper is P. G. Soper. Best information Inspector can get is that 10,000 tons of coal were stripped, valued at \$22,500, and gave employment to 55 men 125 days during the year. These are local-trade strip pits, and the average selling price is \$2.25 per ton. P. G. Soper, strip-pit operator.

OTHER KANSAS COAL MINES.

Office No.	Name of operator or company.	Post-office address.	Mine No.	Name of pit boss or underground foreman.	Location of mine.	Railroad connection?	Name of railway.	Kind of opening ...	Power used.	
									Kind.	H. P.
1	Leavenworth county:									
	Leavenworth Coal Co.	Leavenworth	1	John Dobson, Grant Parker, and S. K. Lowery ...	N. E. Leavenworth,	Yes.	S	Shaft,	Steam,	800
2	Home-Riverside Coal-Mining Co.	Leavenworth	†	John Patterson and Tom Graham ...	Leavenworth	Yes.	|	Shaft,	Steam,	...
3	Penitentiary mine.	Lansing	1	D. Casselman	Lansing			Strip,		...
	Brown county.	White Cloud						slope,		...
	Chautauqua county.	Leeds						Strip,		...
	Labette county.	Oswego						Shaft,		...
	Republic county.	Minersville								...
1	Bourbon county:									
	City market scales.	Fort Scott								...
2	East city scale.	"								...
3	Yeakel city scale.	"								...
4	C. A. Brockert Cement Works	"								...
5	Geo. Lamping, coal dealer	"								...
6	D. P. Thomas, Cement Works.	"								...
7	Estimate of all other productions.	"								...
8	Lincoln county:									
	A. T. Bureman Coal Co.	Denmark	1	A. F. Bureman	N. W. Denmark	No.		Shaft,	Horse,	...
1	L. P. Nelson Coal Co.	"	1	L. P. Nelson	"	"		"	"	...
2	C. McDanna Coal Co.	Lincoln	1	C. McDanna	S. Lincoln	"		Drift,	"	...
3	Mike Garity.	"	1	Mike Garity	"	"		"	"	...
1	Shawnee county:									
	W. A. Eaton & Son.	Topeka	4	Wm. Eaton	W. Topeka	No.		Shaft,	Horse,	...
2	D. L. Heaton	"	4	D. L. Heaton	"	"		"	"	...
3	W. E. Porter	Seabrook	1	W. E. Porter	"	"		"	"	...
4	Culbertson & Thoburn *.	Lawrence	†							...
1	Franklin county:									
	Newt. Davall & Co.	Ransomville	1	N. Davall	S. Ransomville ..	Yes.		Drift,	Horse,	...
2	J. H. Ransom and James Simms.	"	1	James Simms	Ransomville	"		Shaft,	"	...
3	J. M. Dyer	Pomona	1	S. E. Richardson	S. Pomona	No.		Drift,	"	...
4	Geo. H. Capa, Jr.	"	1	Geo. H. Capa	W. Ransomville ..	"		"	"	...
5	John Eddy Coal Co. *.	"	1	John Eddy	"					...
6	Estimate of all other productions.	"								...

* Closed indefinitely. † 1 and 2. ‡ Name is Diamond. § U. P. and Mo. Pac. | U. P., Mo. Pac., and Santa Fe. ¶ 150 and 750.

INSPECTOR OF COAL-MINES.

OTHER KANSAS COAL-MINES—CONTINUED.

Office No.....	TONS OF COAL PRODUCED. (2,000 pounds to the ton.)			Total number of tons of coal produced.	EMPLOYEES.												
					Miners	Boys	Mule drivers and pushers	Cagers	Pit bosses, track- layers, roadmen	Engineers, firemen, pump men	Weightmen and dumpers	Car trimmers and prop men	Blacksmiths and carpenters	Total			
	Lump.	Nut and slack.	Mine run.														
LEAVENWORTH COUNTY.																	
1	160,000	30,000	112,261	112,261	235	15	13	2	7	8	13	4	4	301			
2	42,172	22,708		190,000	335				40				60	435			
3				64,880	192		36	6	70	8	6	12	6	336			
4	202,172	52,708	112,261	367,141	762		49							1,072			
5	2,300			2,300	15									15			
6	1,200			1,200	27									27			
7	2,000			2,000	30									30			
8	1,300			1,300	12									12			
BOURBON COUNTY.																	
1	15,738			15,738													
2	960			960													
3	825			825													
4	960			960													
5	2,400			2,400													
6	1,000			1,000													
7	3,200			3,200													
8	3,400			3,400	100	100								200			
9	28,483			28,483	100	100								200			
LINCOLN COUNTY.																	
1			75	75	5				1		1			7			
2			500	500	4				1		1			6			
3			75	75	2				1		1			4			
4			100	100	2				1		1			4			
5			750	750	13				4		4			21			
SHAWNEE COUNTY.																	
1	140	30		70	3				1		1			5			
2	28			28	4						1			5			
3			706	706	8				1		1			10			
4																	
5	168	30	706	804	15				2		3			20			
FRANKLIN COUNTY.																	
1			251	251	5				1					6			
2	3,700			3,700	24	3	2		1		1			31			
3			1,224	1,224	14				1		1			16			
4			277	277	5				1					6			
5																	
6				1,000													
7	3,700		1,752	6,542	48	3	2		4		2			59			

OTHER KANSAS COAL-MINES—CONTINUED.

Office No.....	No. of kegs of powder used during the year ..	No. of days mine worked during the year.....	Av. price paid per ton for mining.		Estimated value of fixtures.....	Estimated value of mine.....	Average selling price of coal at mine.					Selling price to local trade at mine, per ton..	Av. wages paid day man underground.....	Av. wages paid day man over ground.....
			Lump	Mine run..			Lump.....	Nut.....	Slack.....	Mine run...				
LEAVENWORTH COUNTY.														
1	25	194	.....	\$0 80	\$35,000	\$25,000	\$1 25	\$0 90	\$0 50	\$1 00	\$2 00	\$2 00	\$1 75	
2	50	230	.....	80	30,000	40,000	1 33	1 20	50	1 25	2 00	2 00	1 75	
3	1,000	210	.....			150,000	1 40	1 25	.....	1 32 ¹ / ₂	2 00			
		160	\$1 50	.....	\$100	\$200	2 00				2 00			
		75	2 00		200	300	2 50				2 50			
		100	2 00		200	300	3 00				3 00			
		100	1 50		100	200	2 25				2 25			
BOURBON COUNTY.														
1							\$2 00							
2							2 00							
3							2 00							
4							2 00							
5							2 00							
6							2 00							
7							2 00							
8		150	\$1 25				2 00							
LINCOLN COUNTY.														
1		125		\$2 00	\$50	\$300	\$3 00					\$2 00	\$1 50	
2		140		2 00	300	1,000	3 00					2 00	1 50	
3		60		2 00	50	100	3 00					1 75	1 50	
4		70		2 00	50	150	3 00					1 75	1 50	
		395			\$450	\$1,550								
SHAWNEE COUNTY.														
1	2	110		\$1 62 ¹ / ₂	\$75	\$125	\$2 50					\$1 75	\$1 50	
2		20		1 75	125	150	2 75					1 75	1 50	
3		227		1 75	125	300	2 75					1 75	1 50	
4														
	2	357			\$325	\$575								
FRANKLIN COUNTY.														
1		120		\$1 25	\$100	\$150	\$2 00					\$1 75	\$1 50	
2	25	250		1 25	300	1,500	2 00					1 75	1 50	
3		125		1 25	100	3,000				\$1 75		1 75	1 50	
4		122		1 25	25	75				1 75		1 75	1 50	
5														
6										1 75				
	25	617			\$525	\$4,725								

CASUALTIES.—Killed: At Leavenworth Coal Company's mine, 1. Injured: At Home-River-side mine, 1; at penitentiary mine, 6.

OTHER KANSAS COAL-MINES—CONTINUED.

[illegible]

OTHER KANSAS COAL-MINES—CONTINUED.

Office No.....	TONS OF COAL PRODUCED. (2,000 pounds to the ton.)			Total number of tons of coal produced.	EMPLOYEES.									
	Lump.	Nut and slack.	Mine run.		Miners	Boys.....	Mule drivers and pushers.....	Cagers.....	Pit bosses, track- layers, roadmen..	Engineers, firemen, and pump men...	Weighman and dumpers.....	Car trimmers and prop men.....	Blacksmiths and carpenters.....	Total
LYON COUNTY.														
1	181	.....	.....	181	5	.....	.....	.....	1	.....	.....	.....	.....	7
2	334	.....	.....	334	5	.....	.....	.....	1	.....	1	.....	.....	7
3	320	.....	.....	320	4	.....	.....	.....	1	.....	.....	.....	.....	5
	835	.....	.....	835	14	.....	.....	.....	3	.....	2	.....	.....	19
ELLSWORTH COUNTY.														
1	225	.....	.....	225	4	.....	.....	.....	1	.....	.....	.....	.....	5
2	954	.....	.....	954	13	1	.....	.....	1	.....	1	.....	.....	16
3	248	.....	.....	248	5	.....	.....	.....	1	.....	.....	.....	.....	6
	1,427	.....	.....	1,427	22	1	.....	.....	3	.....	1	.....	.....	27
ELK COUNTY.														
1	320	.....	.....	320	4	.....	.....	.....	1	.....	.....	.....	.....	5
RUSSELL COUNTY.														
1	101	.....	.....	101	7	.....	.....	.....	1	.....	.....	.....	.....	9
2	30	.....	.....	30	2	1	.....	.....	.....	.....	1	.....	.....	3
3	50	.....	.....	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	181	.....	.....	181	9	1	.....	.....	1	.....	1	.....	.....	12
ATCHISON COUNTY.														
1	1,652	.....	.....	1,652	15	.....	.....	.....	1	.....	.....	.....	.....	16
2	3,500	.....	.....	3,500	30	.....	1	.....	1	.....	1	.....	.....	33
	5,152	.....	.....	5,152	45	.....	1	.....	2	.....	1	.....	.....	49
LINN COUNTY.														
1	25,932	.....	.....	25,932	75	.....	3	1	1	2	1	1	1	85
2	803	.....	.....	803	4	.....	1	.....	1	.....	1	.....	.....	7
3	40	.....	.....	40	2	.....	.....	.....	1	.....	.....	.....	.....	3
	26,775	.....	.....	26,775	81	.....	4	1	3	2	2	1	1	95
CLOUD COUNTY.														
1	1,000	.....	.....	1,000	8	2	.....	.....	1	.....	.....	.....	1	12
2	800	.....	.....	800	4	.....	.....	.....	.....	.....	1	.....	.....	5
3	1,000	.....	.....	1,000	10	.....	.....	.....	.....	.....	.....	.....	.....	10
	2,800	.....	.....	2,800	22	2	.....	.....	1	.....	1	.....	1	27
COFFEY COUNTY.														
1	8,000	.....	.....	8,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	2,000	.....	.....	2,000	35	.....	.....	.....	.....	.....	20	.....	.....	55
	10,000	.....	.....	10,000	35	.....	.....	.....	.....	.....	20	.....	.....	55

INSPECTOR OF COAL-MINES.

OTHER KANSAS COAL-MINES—CONCLUDED.

Av. wages paid day man over ground.....	
Av. wages paid day man underground.....	
Average selling price of coal at mine.	
Mine run.....	
Slack.....	
Nut.....	
Lump.....	
Casu- alties.	Injured.....
	Killed.....
Estimated value of mine.....	
Estimated value of fixtures.....	
Av. price paid per ton for mining.	Mine run.....
	Lump.....
No. of days mine worked during the year.....	
No. of kegs of powder used during the year.....	
Office No.....	

LYON COUNTY.

1		65	\$1 75		\$200	\$800		\$2 25			\$1 75	\$1 50
2		55	1 71½		300	1,000		2 25			1 75	1 50
3	3	65	1 75		300	1,000		2 25			1 75	1 50
	3	185			\$200	\$2,800						

ELLSWORTH COUNTY.

[illegible]

ELK COUNTY.

1	1	60	\$1 75		\$200	\$1,000			\$2 50				\$1 75	\$1 50
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RUSSELL COUNTY.

1 2	50	\$2 25	50	\$300	\$3 00	\$1 75	\$1 50
	40	2 50	50	200	3 00	1 75	1 50
					3 00		
	90		\$100	\$500			

ATCHISON COUNTY.

1	10	160	\$1 25	.....	\$100	\$500	.....	\$2 50	.....	.....	\$1 75	\$1 50
2	3	250	1 25	.....	1,000	1,000	.....	2 50	.....	.....	1 75	1 50
	13	410	.....	.....	\$1,100	\$1,500	.....	.....	.....	.....	.....	.....

LINN COUNTY.

1	15	220	\$0 75	.....	\$1,500	\$25,000	.....	.....	\$1 10	.....	\$1 00	\$1 75	\$1 50
2	2	200	75	.....	500	1,000	.....	.....	1 00	.....	1 00	1 75	1 50
3	1	25	75	.....	500	2,000	.....	.....	1 00	.....	25	1 75	1 50
	18	445	.....	.....	\$2,500	\$28,000	.....	.....	.....	.....	.....	.....	.....

CLOUD COUNTY.

1 2	120	\$1 30	\$500	\$1,000	\$2 25	\$1 75	\$1 50
	200	1 30	100	500	2 25	1 75	1 50
					2 25		
	320		\$600	\$1,500			

COFFEY COUNTY.

[illegible]

A MINE EXPLOSION.

On the evening of January 8, at mine No. 5 belonging to the Mt. Carmel Coal Company,* located four and one-half miles southwest of Pittsburg, there was an explosion, in which three shot-firers lost their lives, one being burned to death, and the other two asphyxiated from the after-damp caused by the explosion. Their names are as follows: John Possing, Charles Winters, and Antone Weinberger. There has been a great deal said as to the cause of the explosion by men who never were inside of the mine, but claim to know more about the explosion than the men who made a careful examination, and worked in the same. In order that the miners and the public may know the truth, the Inspector gives the testimony of all the parties who testified before the coroner's jury, and among the same is the testimony of the Inspector. The Inspector will recommend elsewhere an amendment to the mining law relating to shot-firing in mines, which he believes ought to be enacted into law for the better protection of the shot-firers. The present shot-firing law is not strong enough. It allows the shot-firer to fire too many shots at one time, and he is usually in too big a hurry to notice whether the shots he is firing are lawful shots or not. The shot-firer does his work in from two to three hours and is paid for ten hours' work. In order to do this, he goes back to missed shots to fire them sooner than he ought to do, and in more than one instance has been caught in the gases from burnt powder, and shots have gone off which the shot-firer thought had missed; and in more than one case the shot-firer has lost his life from going back too soon.

At an inquest holden upon the bodies of John Possing, Antone Weinberger, and Charles Winters, of Chicopee, Kan., January 8-10, 1898, EDWARD FLYNN, testified in substance as follows:

At the time of the explosion at No. 5 I was mine foreman at that shaft. Soon after the explosion I went down, and saw rubbish and cars piled up. I climbed down the bunting. I met Serat climbing out. I went to work at once putting up curtains where doors were out. There was no smoke in the mine and no gases that I could smell. There seemed to be some damp. I saw no signs of fire at the bottom nor in the stable. Searching parties started at once. The first body in the mine was reached between eleven and twelve o'clock. The body of Winters was found a good while afterward, toward morning. I do not know what caused the death of the deceased. It was a custom with the miners for each one to take down 12½ pounds of powder. I do not weigh the powder. There was no gas to speak of in that mine. It was common to find a little gas in drill holes. I never

* See map of this mine, opposite page 16.

regarded that amount of gas as dangerous. I noticed that the hay at the stable was scattered about but not burned. The fan was in motion when I got to the pit after the explosion. These men in the mine at the time of the explosion were shot-firers; all but one regular shot firers. One was a substitute. I do not know where the explosion originated. These shot-firers were all experienced men. Number 5 is a dry mine. I have seen drier mines. I cannot tell whether coal-dust is explosive or whether an explosion can be generated by it. There are about 200 men to a shift and they average two shots each a day.

The above is a synopsis of Edward Flynn's testimony. Inspector did not have it in detail.

JAMES ZIMMERMAN, being duly sworn, testified as follows :

Ans. I was shot-firer at the time of the explosion at No. 5. I went down about five o'clock on the evening of Saturday, January 8, by myself. My work was in the first and second north entries on the east side of the mine. After I had fired about an hour and a half I heard a windy shot coming. I started to get out, but could not. I stayed in the pit until nearly morning. Once when I started to go out I fell on account of the damp. The rescue party came and got me. I had been asleep. I saw no other men while I was in the mine. I guess I know the law of shot-firing. The company does not instruct us to fire singly and get through as quickly as possible. I could tell it was a windy shot by the loose things flying around my head. I tried to go out to the shaft, and tried to go out to look where the wind from shot came from, but the smoke and damp was too thick for me. I think when I fell I did n't know anything for a while.

Ques. (by jury). You fell there and lay unconscious?

A. Yes.

Q. What was the condition of the mine when you was in there; was it all right?

A. Yes, everything was all right.

Q. There was no difference between the condition of the mine then and the condition of it the day before?

A. All the same.

Q. Had the mine been sprinkled that evening?

A. Where I was it was sprinkled—in my entry.

Q. When do they sprinkle? Before you go in there; that is, before you fire or after?

A. It is pretty wet all the time.

Q. Had there ever been any indications of an explosion previous to this time?

A. No.

Q. You say you heard this windy shot coming and you say you saw fire?

A. No; I had my face turned the other way in the room.

Q. Have you any idea how far you was from that shot when it was fired?

A. I was about 500 feet away.

Q. Did you make any effort to get out of the mine?

A. Yes.

Q. Whose fault was it? the man who fired the shot, or the man who put it in?

A. That is more than I can tell, whose fault it was.

Q. Were windy shots frequent? Do you have them frequently in the mine, or only once in a great while?

A. Once in a great while.

Q. Do you or do you not as a shot-firer exercise your own judgment in regard to setting off a shot? It is left to your own judgment, is it not?

A. Yes.

Q. Suppose you thought a shot was dangerous to fire, would you fire it?

A. No; nobody can make me fire it.

Q. What are your instructions from the company in that particular? What does the company tell you to do? Do they tell you not to fire a shot if it is dangerous? What does the pit boss tell you? not to fire dangerous shots?

A. He never said anything to me.

Q. How do you know, then, that you do n't need to fire dangerous shots?

A. They told me in No. 2 in Frontenac not to fire them when they was dangerous.

Q. (by Coroner Porter). Then it seems to be a rule of the company not to fire dangerous shots?

A. Looks that way. He told me three or four years ago. If I think it dangerous, I leave it stay.

Q. (by jury). Has the pit boss ever complained to you about not firing off certain shots because, in your judgment, you thought it was dangerous?

A. He never said anything to me.

Q. (by Coroner Porter). You said that two or three years ago you were not required to fire dangerous shots. Who told you that?

A. Henry Wilson, of Frontenac.

Q. Was he with the same company?

A. Yes, I guess so.

Q. Did you ever talk to any of the other shot-firers about leaving shots that were dangerous?

A. No.

Q. Did you ever leave a shot because you thought it dangerous?

A. No, I never did; but I heard John Possing say he done it.

Q. Then you think Possing, who fired this windy shot, understood that there was danger in those shots? I do n't mean this shot; but that generally those windy shots were dangerous? You have heard Possing say that?

A. Yes.

Q. (by jury). Do you think that the ventilation of the mine was such that it could have been better, so that this shot would not have produced this effect?

A. I could not say, because I never fired the shot.

Q. Have you always had good air, and did you have good air Saturday night?

A. No.

Q. I mean before the explosion?

A. Yes.

Q. Have you ever seen it worse than that night?

A. No.

Q. I mean before the explosion?

A. It was all right before the explosion.

Q. (by Coroner Porter). How was it the night before the explosion?

A. It was good.

Q. It was always good in the entry before that night?

A. Yes.

Q. (by jury). Has any other shot-firer ever said anything to you about the air being bad in that part of the mine?

A. Never said anything to me.

Q. Has ever a windy shot gone off before?

A. Once in a while they do.

Q. You know of several since you have been firing there?

A. Yes.

Q. What do you understand as a windy shot? What is it?

A. I call it a windy shot if it goes off and takes the cars and other things and throws them around in the shaft. I call that a windy shot.

Q. They do not occur very often, do they?

A. No.

Q. Do they make a blaze? [Man interrupts, saying, "Oh, Jim, don't talk too much. You can talk to-morrow or some other day." And when told to keep quiet, or he would be put out, he said, "That is my buddy." Name of man interrupting, Jacob Ditman.]

Q. How long have you been a shot-firer?

A. Five or six years.

Q. (by Coroner Porter.) Was Possing a regular shot-firer?

A. Yes.

Q. (by jury). About how far from where you laid down was Mr. Possing found?

A. I expect about 500 feet.

Q. Did you feel the air of that windy shot?

A. Yes.

Q. Was it hot?

A. Yes.

Q. Did it smell like powder smoke?

A. Yes.

Q. Why couldn't you escape if it was powder smoke?

A. It was not the powder smoke; it was the after-damp that kept me from coming out. The smoke was standing in one place.

Q. Did you feel the effect of the explosion — hear the noise?

A. I heard the windy shot passing me.

Q. Did you hear the cars tumbling around?

A. No, sir.

Q. When did the after-damp come? When do you generally have after-damp air?

A. That is the first time I have felt that.

Q. Were you ever in an explosion before?

A. No.

Q. (by Coroner Porter). Do you know whose room this was in where this windy shot was fired?

A. No.

Q. You don't know who put in the shot?

A. No.

Q. (by John Randolph). After you heard that windy shot you tried to get out?

A. Yes.

Q. How far did you go before you met the bad air?

A. I walked about 300 feet out to the bottom before I got into bad air.

Q. Then you went back and you were all right?

A. Yes.

Q. Then you were not hurt?

A. No.

Q. You tried to go out another time and got into bad air again?

A. Yes.

Q. There was no bad air where you were?

A. No, there was smoke.

Q. You lay down and went to sleep after a while?

A. It was after midnight when I went to sleep.

Q. They woke you up when they came in, did n't they?

A. Yes.

THOMAS FLYNN, being duly sworn, testified as follows:

Q. What is your occupation?

A. Engaged in mining at No. 5 shaft, Chicopee, Kan.

Q. (by Coroner Porter). Were you acquainted with deceased, John Possing?

A. I was acquainted with John Possing.

Q. Was the air good where you worked?

A. I have heard no complaint of bad air from any one.

Q. (by jury). Have you been down in the shaft since the explosion?

A. Yes.

Q. When?

A. Saturday night.

Q. Have you been in to where this man Possing was burned, in his room or near there?

A. I started in there. The other men went ahead and brought him out and we carried him out.

Q. You have not been back since then?

A. No.

Q. How have they kept the dust down, so far as you know?

A. By sprinkling the entry where I am working.

Q. Have you looked upon this mine as dangerous?

A. No, sir.

Q. Did you notice any dust in the room—I mean in the room where you work?

A. No, sir.

Q. Have you ever seen any indication of danger in this mine?

A. No, sir.

Q. Never heard of any?

A. No, sir.

Q. How did it compare with any other shafts where you have worked?

A. Good.

Q. What experience have you had as a miner—how many years?

A. Thirty years.

Q. Have you any idea as to the cause of this explosion?

A. No, sir.

Q. Did you notice any indication of gas?

A. No, sir.

Q. Was it understood among the men that dust would explode?

A. I do n't know. I never read any on the question.

Q. (by Coroner Porter). How far was Possing's body found from the main shaft?

A. It was 700 or 800 feet.

Q. Will you show the location on that board?

A. He was in the fourth north [makes diagram on the board].

Q. The air on the north side goes which way?

A. It travels [pointing to diagram] up and then goes back. I do n't know much about the east side.

Q. (by jury). Did you notice any indication of fire while in the mine?

- A. No, sir.
- Q. Did you notice any mules that were injured?
- A. Two were standing up and one was lying down.
- Q. Did the hair look as if it was singed or burned?
- A. I could not see whether they were dusty or burned; did n't pay much attention; had other things in view.
- Q. Did you hear the explosion that evening?
- A. No, sir.
- Q. Did you see any indication of fire around the woodwork?
- A. Yes, sir.
- Q. Where was that?
- A. On top.
- Q. Was you ever a shot-firer?
- A. No, sir.
- Q. Windy shots are quite common in the mines, are they not?
- A. Sometimes they are.
- Q. Did you think the air was bad?
- A. No, sir; it was all right.
- Q. (by Coroner Boaz). What do you do—dig?
- A. Yes, sir.
- Q. You are not over the mine very much?
- A. Just in the room where I work.
- Q. You do n't know much about the condition of the east side?
- A. No, sir.
- Q. (by jury). Would this mine be considered a dry mine?
- A. Yes, sir.
- Q. Is a dry mine any more dangerous to an explosion than a damp mine?
- A. It would be a little, I think.
- Q. (by Coroner Boaz). You say a dry mine is more dangerous than a wet mine?
- A. I believe it is a little.
- Q. Would a dry mine be any more dangerous than a wet mine, if there was gas in the mine?
- A. How do you mean?
- Q. If there was gas in the mine, would it explode quicker in a dry mine than in a wet mine?
- A. I could n't tell.
- Q. (by jury). Was you ever in a mine where there was a gas explosion?
- A. No, sir.
- Q. Do you know where the company secures their water here?
- A. No, sir; at the pond is all I know.
- Q. (by John Randolph). So far as you know, before this explosion this mine No. 5 was in good condition for safety and work, was it?
- A. Yes, sir.
- Q. Is it a fact that some windy shots, as they are called, are very different from some others?
- A. I have seen windy shots that did n't do any damage, and others that do damage.
- Q. Some cause a good deal more fire and disturbance than others, do they not?
- A. Yes, sir.
- Q. You found some of the mules in the pit that night?
- A. Yes.

Q. Were they all at the stable?

A. Some were at the stable and some was about half way between that and the bottom of the shaft.

Q. The mules that were apparently burned, if you noticed those, were not those at the stable, but those down next to the shaft, were they not?

A. Yes, sir.

Q. You said that some windy shots did more damage than others?

A. Yes, sir.

Q. (by jury). Do you consider that due to the condition of the shot or the mine?

A. Depends on the shot.

Q. (by Coroner Boaz). If a mine is in good condition, would a windy shot do any damage there?

A. I think it would.

Q. (by jury). You said the shaft was in good condition so far as you knew?

A. Yes.

Q. Did you ever go over the shaft to see the condition of the mine; that is, did you ever inspect the condition of the mine?

A. No, sir.

Q. Do I understand you to say that a windy shot in a mine that is not safe is not any more liable to cause an explosion than an ordinary shot, where there is gas or particles of dust or elements that cause combustion?

A. It might be that way; all shots make a report more or less.

Q. It would be just as dangerous for an ordinary shot in an unsafe mine as a windy shot in a good mine?

A. No, sir.

Q. What makes a windy shot?

A. I could not say.

Q. Did you ever see a windy shot?

A. No, sir.

Q. (by Coroner Boaz). You do n't know what a windy shot is?

A. No, sir.

Q. (by jury). Did you ever examine one after it is fired?

A. Yes, sir.

Q. Do you know what the cause of a windy shot is?

A. Not unless the shot-firer drove it too far in.

Q. (by John Randolph). A man in front of a windy shot, if he was near enough to it, would be in about the same condition as one in front of a long-barreled gun containing a heavy charge of gunpowder?

A. Yes, sir.

Q. Is n't it a fact that men in the mines here at Chicopee have gone back to see why the shots did n't go off and have been injured?

A. Yes.

Q. A man would not be safe close by a windy shot?

A. No, sir.

Q. And the danger would be from the blowing out of the tamping or of a rib, or the like of that?

A. Yes, sir.

JOSEPH FLETCHER, being duly sworn, testified as follows:

Q. (by Coroner Boaz). What is your name?

A. Joseph Fletcher.

Q. You are in the employ of the Mt. Carmel Coal Company?

A. Yes, sir.

Q. What position do you occupy?

A. Superintendent of the mines.

Q. How long have you been superintendent?

A. Since one year ago last November.

Q. How long have you been in the mining business?

A. Thirty-two years.

Q. You were not here when the explosion occurred?

A. No, I was at Frontenac.

Q. What time did you get here after the explosion?

A. About as soon after as I could run the horse here; about 7:15 or 7:20, or something like that.

Q. You went right into the mine when you got here?

A. No, sir.

Q. What time did you go into the mine?

A. After I looked over the situation on top, I drove to the fan to see if it was in operation.

Q. What evidence of the explosion did you see when you got to the mine?

A. I saw the fan was displaced.

Q. What did you see after you went down in the mine?

A. I could see lots of debris scattered around; pieces of timber and such like.

Q. Any evidence of fire down in the mine anywhere?

A. No, sir.

Q. In any part of the mine?

A. Yes; in the fourth north on the east side.

Q. What did you see there, Mr. Fletcher?

A. I could see from the indications from the bark on the mine props that the flame had passed over there.

Q. Were you there when the bodies were found? Did you find any of the bodies in the fourth north?

A. Yes, I was there. Some were in the front entry and some in the back. I took the back entry. I think Pierce and Hol —— were there. On the other side of the cars there laid a body.

Q. You was first?

A. No, there were two other men.

Q. Had the body been moved when you saw it?

A. No, the body had not been touched.

Q. Did it look as if it had been blown any distance or as if it had just lain down?

A. Looked as if it had been sitting there waiting and had fallen over.

Q. Whose body was this?

A. It was a body that was burned.

Q. (by jury). What entry was that?

A. Fourth north on the east.

Q. (by Coroner Porter). You said the body had not blown far?

A. It had not been blown. Was sitting there waiting for the shots to go off. He had fired the last place in that entry and the next place would be the fifth north. He was waiting for the shots to go off in No. 1.

Q. (by jury). How long would it take a shot to go off after it was fired?

A. It would be according to what kind of squibs used.

Q. Would a miner wait for them to go off?

A. Yes, sir. If shot-firer do n't fire shots for miners, miners can't work.

Q. I thought he could go away and come back to that?

A. A miner will not walk out of his way. He would not know whether it went off while he was firing those other shots.

Q. (by Coroner Boaz). Have you any idea what caused the explosion?

A. I think it was caused from blown-out shots or powder.

Q. (by jury). You mean windy shots?

A. Yes.

Q. (by Coroner Boaz). Can you tell what it was that exploded in the mine?

A. If the shots were fired, the shots form gas and explode.

Q. You think it was gas that formed from firing off shots?

A. Yes.

Q. Was more shots fired this night than usual?

A. Not in particular.

Q. This man had done more than any other miner; he had finished his work there?

A. I think so.

Q. If gas is formed from firing shots, would n't there be more explosions than there are?

A. Not necessarily; it is owing to the condition of the mine at the time.

Q. What condition would it have to be in to make an explosion?

A. Blown-out shots where she has three or four feet of powder, and if she has less work than would consume all the energy of the powder, it would make gas and you would get more flame, of course.

Q. Would there be enough flame to blow the top off the fan house?

A. Liable to do it as not.

Q. What explosive gases do you have form from the firing?

A. I never have studied chemistry. She forms carbonic oxide. It will explode.

Q. (by jury). Then that was not coal-gas?

A. It was gas that generated from the explosion of powder.

Q. You have been in the mine since the explosion?

A. I went down in the mine and never came out until 10:30 yesterday. I was down there this morning.

Q. I understand you to say that Possing had fired more shots than usual in the same length of time?

A. Yes, sir; he had got through the third and fourth entry and next to the fifth.

Q. He fired third and fourth entry on the east?

A. Yes, sir.

Q. (by Coroner Boaz.) You was in the mine every day?

A. Not every day; every few days.

Q. Did you go over most of the mine when you went down?

A. Yes, sir.

Q. What was the condition of the mine the last time you was down before the explosion?

A. I was down last Tuesday.

Q. What was the condition of the mine that day?

A. I considered it in a good condition.

Q. How about the dust in the mine that day? Was there more than usual, or had it been sprinkled down the last time you saw it?

A. I never noticed any dust there more than there had ever been there.

Q. You have men or a man to look after the condition of the mine?

A. Yes, sir; we have a foreman.

Q. What is his business?

A. He has to look after the mine in general. He gives places to the miners, hears their complaints, discharges men, and, in fact, he has the underground management of the mine.

Q. Do you have a man to look after this sprinkling and see that the air is all right?

A. There is a man to look after the condition of the air, to put up stops, brattices, doors, curtains, etc.—that is his business; but as to the ventilation of the mine, that is looked after by the mine foreman.

Q. Who is the mine foreman?

A. Mr. Flynn.

Q. Who looks after the air-courses?

A. Mr. Anthony Gallagher.

Q. Was he instructed as to his duties when he was put in?

A. I don't know. He is a company man, and is supposed to do any work that is required to do. He is under the direction of the mine foreman; every man below is.

Q. You was n't with the two men who found the other two bodies?

A. I found one of them myself. I was in the lead.

Q. (by Coroner Porter). What body was that?

A. I think it was a body found in the parallel west of the second north. I think his name was Weinberger, or some such name as that.

Q. (by Coroner Boaz). You would not know anything about the condition of the air on Saturday if you was not down since Tuesday or Wednesday, would you?

A. I don't see why it would not be good then if it was good Tuesday or Wednesday.

Q. You could n't tell then whether there was any more cause for an explosion on Saturday, then?

A. One thing, they were firing shots Saturday night, and when I was down last before the explosion they were n't.

Q. (by jury). Had most all of the shots been fired before this windy shot was fired?

A. No, sir; quite a lot were left.

Q. (by Coroner Porter). Were some cartridges still unburned?

A. Not one had been fired that we found.

Q. (by Coroner Boaz). What is the law about the condition of the mine as to the safety of the men?

A. If the mine is worked and is in good condition, I think the mine would comply with the law.

Q. What does the law require the condition of a mine to be in when it is in good condition?

A. It is according to the method of work. You take a mine where they work like these miners on the parallel system —

Q. (by Coroner Porter). Have you any rooms in that shaft that you have to use a safety-lamp in?

A. No, sir; not that I know of.

Q. (by Coroner Boaz). Does the law require that you have a man to go in and see as to the safety of the men?

A. Not unless gas generates in the mine. Then a man must inspect the places where gas generates. In this country, where mines do n't generate gas they are not inspected.

Q. That would only be a local law, then? The mines would only be inspected where gas accumulates?

A. I do n't think there would be any necessity for a mine to be inspected that does not generate gas.

Q. Is that the law of this state?

A. It may be the law of this state.

Q. Does it apply to all mines?

A. I would construe it that way.

Q. Is there any law in regard to sprinkling the mine; keeping the dust down?

A. I do n't know about the law, but it is the custom to sprinkle.

Q. (by Coroner Porter). What is the object in sprinkling the mine?

A. It is done in order to lay the dust, for the benefit of the miners and to make better traveling, and so on.

Q. (by Coroner Boaz). Do you fear danger of explosion from dust in the mine?

A. In what respect?

Q. Is there more apt to be an explosion in a dusty mine than in one not dusty?

A. The dust itself would not explode, I do not think.

Q. (by John Randolph). You were informed as to the general condition of this mine No. 5 for equipments and safety appliances during the time you have been the superintendent of this company, were you not?

A. Yes, sir.

Q. I wish you would state the condition of this mine prior to this explosion as to modern appliances and safety arrangements and methods of working.

A. Well, we have a very large shaft. It is the largest in the state. It is well timbered. We have good machinery. We have a fifteen-foot fan and one of the largest air-shafts in the state. I think our method of work is worked on the double-entry system. There are three main entries. The mine is well ventilated.

Q. Is it not a fact that this mine No. 5 is a great deal above the average throughout the district in the matter of equipments and safety appliances?

A. Yes, sir.

Q. Is it not a fact that that has been its reputation among miners throughout this district?

A. Yes, sir.

Q. To your knowledge, the mine was well equipped with safety appliances and methods of working and was well up with the modern times?

A. Yes, sir.

Q. Is it not a fact that the air-course and arrangements for air have been good?

A. Yes, sir.

Q. Have you brushed your parallel mine roads?

A. Yes, sir; as a general rule in this district it is not done.

Q. What do you mean by brushed?

A. Taking down the top above coal, which is three feet eight inches thick.

Q. Prior to this occurrence of last Saturday evening, had you any cause to anticipate such a disaster in No. 5?

A. No, sir.

Q. Had you anticipated any such disaster as that?

A. No, sir; never.

Q. From all your observations, you had not at any time anticipated any such disaster?

A. Never had any idea of it. I had no cause to think so.

Q. The air-course was good?

A. Yes, sir.

Q. Was the sprinkling in good condition?

A. Yes, sir; we have as good a foreman as there is in this section of the country.

Q. His assistant, Mr. Gallagher, is also a miner of experience and good reputation, is he not?

A. Yes, sir.

Q. (by Coroner Boaz). Speaking about appliances for safety of mines, does the law require any different times in the day, hour or month or so on to see if everything is in safe condition?

A. The mine foreman is there daily, and he examines the air-courses, the condition of the mine; almost every working-place in the mine the foreman is supposed to be.

Q. (by jury). Was it coal-dust on fire?

A. It was not coal-dust on fire.

Q. Is gas that generates from powder explosive?

A. I would consider it so.

Q. This gas that generates from the burning powder, is it explosive?

A. Under certain conditions I think it might be.

Q. Under favorable conditions it will explode?

A. Yes.

Q. Did I understand you to say that it was your opinion that the explosion was due to the many shots being fired in quick succession?

A. No, sir.

Q. Did you not say that the shot-firer had done his work in a short time?

A. I stated that the shot-firer had fired more shots that night than any other shot-firer had fired that night. He did more work, fired more shots. He had finished in 3 and 4, and was next ready for No. 5. The other men had not got back that far.

Q. You found new evidence to-day of windy shot in his section?

A. Yes, sir.

Q. Was it anywhere near this last place?

A. Yes, sir.

Q. How far from that?

A. About 200 feet from that.

Q. Can a shot-firer always tell a windy shot?

A. I don't think he could or he never would have fired it.

Q. Is a shot-firer supposed to know when a shot is dangerous to fire?

A. I think if the shot-firer thinks the shot is not safe to fire he would pass it by.

Q. The miner would not have any right to fire it himself?

A. No.

Q. In your opinion, it was not the amount of work the man done, but the windy shot, that caused the explosion?

A. Yes, sir. There were two in the same room; two windy shots—room 1 off the fourth north entry east.

Q. Do you know the man who works in that room?

A. I do not.

Q. (by John Randolph). Did you examine rooms Nos. 1 and 2 off the fourth north east?

A. Yes, sir.

Q. After the accident?

A. Yes, sir.

Q. Did you find any evidence of blown-out shots?

A. Yes, sir.

Q. Where?

A. In room 1 off the fourth north on the east.

Q. Both in room 1?

A. Yes, sir.

Q. Where were these evidences relative to the place where you found the body of Possing?

A. They would be 200 feet, I should judge.

Q. Were they at the face of room 1?

A. Yes, sir.

Q. Where was the body found?

A. In the cross-cut leading into the fourth north entry.

Q. He had evidently been sitting there?

A. Yes, sir.

Q. Now, from the position of the evidences of these blown-out shots and from the body, could the flame and fire have reached him from where you found the body?

A. I was positive that it did.

Q. It was the flame and fire from those blown-out shots that killed him?

A. Yes, sir.

Q. He was the man that was burned?

A. Yes, sir.

Q. Could all the other damage that you found done in that mine and the results of the apparent explosion have been brought about by those blown-out shots in that room?

A. Yes, sir.

Q. And the after-damp that was created produced the death of the other men?

A. Yes, sir.

Q. (by jury). How far was that room open?

A. Something over 200 feet.

Q. How many break-throughs?

A. Maybe three.

Q. Any filled up?

A. Not to-day.

Q. In your opinion, had they been filled up?

A. I do n't see how the men could have worked if they had not been filled up.

Q. (by John Randolph). If those break-throughs in room No. 1 had been curtained or filled up prior to the explosion, would the stopping have been blown out by these windy shots?

A. Yes, sir.

Q. That would have been a natural consequence, would it not?

A. Yes, sir.

Q. (by jury). Would or would not the windy shots produce the same effect whether these were stopped up or not?

A. No; would have no effect or influence upon those shots.

Q. (by John Randolph). They are stopped up to conduct the air to the face of the room?

A. Yes, sir.

Q. And the gobbing or putting up of curtains is done for the purpose of carrying air up to the face of the room and carrying out smoke?

A. Yes, sir.

Q. (by Coroner Boaz). How far from the main shaft back of this room was the explosion?

A. About 900 or 1000 feet to the face of the room.

Q. Were there any other shots fired between this room and the main shaft?

A. Yes; they could be firing on the first and second north or the first and second south.

Q. Do you think there would be gas enough formed from these two windy shots to do the danger that it did on top?

A. Yes, sir; I think those windy shots would do it.

Q. (by John Randolph). It might pick up other powder on the way, might it not?

A. Yes, sir.

Q. (by Coroner Boaz). You don't think there was anything else there that would cause the explosion except this gas from firing shots?

A. I do n't think the mine generated any gas.

GEO. T. McGRATH, being duly sworn, testified as follows:

Q. (by Coroner Boaz). Where do you live, Mr. McGrath?

A. At Weir City.

Q. What is your occupation?

A. State Coal-Mine Inspector.

Q. Were you here at the time of the explosion Saturday night?

A. No, sir.

Q. Where were you?

A. I had just left my home or had just started for Osage City. They sent me a telegram. My wife got it and forwarded it on to me. I came back and came over here. I got here Sunday at 1:30 p. m.

Q. When did you ever inspect No. 5 shaft of the Mt. Carmel Coal Company?

A. July 13, 1897.

Q. Was the shaft in good condition at that time?

A. The sanitary condition was practically good at that time. I have copies of my notes made at that time.

Q. When did you next go in the mine?

A. This morning at ten o'clock.

Q. In what condition did you find the mine this morning?

A. In somewhat of a wrecked condition?

Q. What was the cause of that condition? Could you tell?

A. Results of an explosion.

Q. You inspected the mine this morning?

A. Three parts of it—the principal points of it—to locate if possible the cause of the explosion, so that I could report it to you fellows this afternoon. I suggest that I read my notes made in the mine this morning. I can give it more correctly because I took the notes at every point and place. [Reads; page 1.] "I went down into mine No. 5, Mt. Carmel Coal Company, this morning at ten a. m., accompanied by J. Fletcher, Peter McCall, and John Bell. When on the bottom started west to first north on the west side. There we found the door belonging to the first north pressed north; 100 feet from the mouth of the north entry was a T iron rail blown south and bent into horseshoe shape. First west off second south at that point the wreckage seemed to be less. Stopping in cross-cut at this point blown north. [Page 2.] Little further west in first west entry another stopping blown north. This was in the same entry only further west. To the point where Antone Weinberger was found was 400 feet

from the first north entry off of west parallel entry. At room 9 was found a box of squibs which he carried with him. They are not burnt. All stoppings along that entry up to this point were blown to the north. [Page 3.] Four shots at head of this parallel entry. One coal shot tamped and two coal shots not tamped. Brushing shot was tamped. The shots were wrapped up in waterproof paper. The powder in both cartridges was dry, and at this point no disturbance of an explosion."

Q. (by Coroner Boaz). Would powder ignite from a flame?

A. I think so. "The powder left to be used in holes not tamped was standing up against the coal in cartridges. There was a little moisture across the head of the face of that entry. Bottom was moist clear across the face of that same entry. Room No. 10. Three shots; one tamped, two not tamped. Powder setting up against the drill holes and dry. The shot on the right rib four feet in the solid, and a dangerous shot to be fired. It was not fired. The needle was in it. I examined the shot."

Q. (by jury). Why was it dangerous?

A. Because it was drilled in the solid and could not do its work.

Q. Do you consider it dangerous to put a shot in and fire the shots in the vicinity of one that had no tamping?

A. When the shot-firer comes in he would put the powder in drill holes and tamp them up before he would fire. The powder would be placed in the coal in the drill holes. When the drill holes are wet the miner leaves that powder there and everything ready for the shot-firer to tamp the shot. [Page 4.] Room 9. Three shots; one tamped, two not tamped. Everything undisturbed. Room 8. In this room is a horseback; merely drove in and widened and stopped. Two tool-boxes in this room and in one of the boxes a powder can had about four pounds of powder in it undisturbed. Room 7. Off of room 7 is room 8; turn in behind horseback. All shots fired up to that point. There where he ceased firing. From there to the face they are not fired. [Page 5.] Back entry in this parallel entry shots not fired. One tool-box lid off of tool-box; do not know whether torn off or not. Think it was not torn off by explosion, but might have been torn off. There is a can with about five pounds of powder in that box."

Q. (by jury). Was the can sealed up?

A. Just the ordinary cap that goes over the top of the can that is used at the mines. It was not exposed, and contained about five pounds of powder. "From that point I came back to the air-course, following the main west entry. This entry is the main air-course, in the northwest quarter of the mine. Eight hundred feet from the bottom of the shaft on that air-course was found a dinner-bucket. This dinner-bucket was supposed to belong to Joseph Settler, one of the shot-firers. From that point came on to the head of the main west entry. No shots fired in the head of the main west entry, or the rooms close by, nor nothing disturbed."

Q. (by jury). Was that on the south side?

A. On the main west entry leading from the bottom of the shaft. "Fifteen hundred feet from the bottom to the face of that entry; the last place upon the main west that showed any signs of explosion was 750 feet from the bottom of the shaft, at a cross-cut on the north side of the entry. There it showed the stopping had been blown partly out into the entry. At the third south—this is off of the main west—door blown south of main west; blown in through the front and partly broken into slivers, but not torn out. From that point I came on to the bottom. Pit cars on the bottom of the west side looked to be blown toward the main shaft. There is generally a bunch of cars on the switch, and they

looked to be forced toward the main shaft. I did n't examine the other entries. Came on to the east side. Here there was an addition added to the company, and were accompanied by Archie Craig, superintendent of the Western Coal and Mining Company, and Archie Kirkwood, superintendent of the Wear Coal Company. Now, on this side, the wreckage had been partly cleared up at the bottom. The overcast had been blown down. All the boards had been blown down from the force of the explosion, but none of the large timbers had been broken, and that was cleared up. They said they had to canvas this to get air into the rest of the mine. They used canvas and oilcloth in place of boards. Mr. Flynn, the mine boss, stated that there was nine mules in the mine; five were burned and crippled, two was killed outright. I saw dead mules on top. Three of these five that were so burned and crippled were killed to put them out of their misery—a humane act. The other four were on the bottom, standing hitched to cars. They were not seriously crippled; one was scorched, and the other showed that its mane and hair was scorched. The others were not hurt. From there go to first south off of main east. The door of that entry was blown out on to the main east entry. At cut-off road from first south, the second south off of main east, at this point a curtain was hanging, the first one that we met that was hanging through the explosion. I examined that curtain along the edge, and the ravelings along the edge were not burned. It was 285 feet from the main east entry to this curtain. The man Charles Winters was found on the second south entry east side, opposite room No. 1 running east, inside hauling cross-cut road for third south. On to room No. 13. At this point a box of squibs were spilled just behind a car, and six matches were found here. Two of these matches he had tried to light and four were not struck." The matches were brought out; at least I told Mr. Fletcher to put them in his pocket.

Q. (by jury). How far was this from where the man was found?

A. It was in the neighborhood of 600 feet. It was up close to the point where he quit firing. I think he got from that point close to 600 feet. He lost his squibs there when he got that far. He was coming out. I made out there he was in the dark and trying to light his lamp at this point.

Q. Do you think the explosion had occurred before this?

A. I think that it was over and that it blew his light out. "I went on to the face of the second south. Here there was two shots, both fired, and no signs of any explosion at that point. Came back to the first east entry off of second south. There is a new east entry just driven in a short distance; on the face three shots, all fired. One room turned off of that first east entry, and one shot in there and it was fired. Last shots fired on his run in that entry. Came back to room 14 on second south; three shots, one tamped and two not tamped, and powder not burned; powder setting up against the coal; the powder to be used there still setting there, not burned. The man who worked in that room left it there. He left it there ready and convenient for the shot-firer. A shot-firer will enter that room, put powder in drill hole, and tamp with bar on needle. Indications show that at about this point this shot-firer, Winters, started to come out of there; no signs of explosion there, but the explosion had occurred and he started from that point to come out. Six hundred and thirty feet from the place where Winters was found was the last room that was not fired. He had gone 630 feet from that point where squibs and matches were found. At the point where he was found was considerable wreckage. Slate and props were blown into the entry where he was found, and this wreckage was not inside from where he had come from."

Q. (by jury). He probably did not know of the explosion until he got into that locality?

A. Yes, he did. "Came out onto the main east entry and went to the third north of the main east."

Q. (by jury). Passed over to the main entry?

A. Yes. "There the door of that entry was blown into the third north, 120 feet or about that, and torn all to pieces; iron work all twisted up. I went on a little further to cross-cut off of third north leading to fourth north. A post stood up there at that point, and the entire inside of that post was scorched. That was the first indication of fire."

Q. (by jury). Didn't you say that the door had blown north and that the scorching was on the north side of the post?

A. I did. The post stood in between this cross-cut and that entry, and the north side was scorched and the other side was not. "In this same cross-cut leading to the fourth there was a lot of rock torn down on top of three cars in that cross-cut. It seems as though the force of that explosion tore the rock down. There was quite a large slab of it torn down and piled up on the cars. The end of the inside car on that cross-cut was burned and charred. It seemed as though the fire had pasted a lot of fine dust up against the end of that car facing east and burned the end of the car and dust into a coke. John Possing was found just inside of this cross-cut."

Q. (by jury). Still east of this car?

A. A little east of the car, on the line of the fourth north entry. This cross-cut is a hauling cross-cut from the fourth north entry to the third north entry. He was headed towards that cross-cut, to come out of there. A prop that was still standing where his head was supposed to be when they found him was burned and charred. It would be the north and east side of the prop, because it was on the southwest side of the break-through. "From this point I went on to room No. 1 off of the fourth north off of main east."

Q. (by jury). Those rooms are numbered from face of main entry?

A. From main entry in. "In this room there was two shots; both shots had been fired. One was ahead of the other, in face of room. Over toward side was both shots. The front shot had been blown out and scattered along the left rib of the room."

Q. (by jury). That was what you would call a good shot?

A. A little better than good. "The second shot, four feet of the drill hole left; about two feet of the drill hole blown off. The drill hole was about six feet deep—six feet at point of shot."

Q. (by jury). Was that anything unusual in a shot?

A. No. "The length of the second shot was nine feet long. I took length of front shot: four feet nine inches; and the width three feet and six inches. That is the shot I explained was all blown out and scattered along the rib. The indications showed that the miner wanted this shot to go first and he probably powdered it more than he ordinarily would in order to get it out of the way of the second shot."

Q. (by jury). They are fired at the same time?

A. The shot-firer lights his squibs at the same time in rotation. "Everything in this room showed signs of an explosion. Coming back a few feet from the face of the room, all the posts which were standing in the room were scorched, and showed that there had been considerable fire there and continued all the way out to where John Possing was found. After I was satisfied with everything else, I

came back for more details at this point. I took measurements at front and back of the second shot; it was three feet two inches in the front in thickness and three feet eight inches in the back of shot where the drill hole was. The coal was three feet eight inches at this point."

Q. (by jury). Do you call that poor firing?

A. It certainly must have been carelessness on his part. "We were about to leave, but on looking around we found another shot. This other shot had been fired too. It was six feet four inches deep and four and one-half feet wide at the heel of the shot, and ten feet wide on the point of it. The shot had been fired like a clean gunshot. This shot was intended to make a break-through into room No. 2 off of same entry, and had evidently drilled a big, heavy shot in there. It was thirty feet back to face of room where this shot was. It was the intention to make a cross-cut into room No. 2."

Q. (by jury). Did he fire all three of those shots before he left the room?

A. I think he did. It is understood that he was an old shot firer and a practical one. He would fire all while in there and not want to come back again. They usually light all shots in the room. He would light front shot up close, so that it would fire before either of the others. He might light No. 3 first, No. 2 second, and 1 last, and he would leave 2 and 3 with jumpers in the needle hole, powder exposed at both ends of the jumper squibs. By putting jumpers in and tightening squibs the explosion of one wont cause the other to go out. All three of these shots were fired. No. 2 and 3 shots did n't do anything, but No. 1 blew itself entirely clear out.

Q. Do you think that was the shot that caused the explosion?

A. I think either one or both of these; No. 2 and No. 3 both gunned back, and as they were heavy shots they undoubtedly started that explosion. Timber was scorched from there on out. They was fired and did n't break out any coal; they gunned back. From the face of room No. 1 back to the last cross-cut [I was coming back out of the room] it was thirty-eight feet by tape measure from face back to last cross-cut, and the width of that cross-cut was fifteen feet. From room No. 2 off of the same entry, that was the fourth north off of the same entry, had two shots; both fired, both good shots. This is the last of the firing on this run. This is in the third and fourth north entries and its rooms. This was the last on that run he fired. The distance from the face of room No. 1 to where John Possing was found is 264 feet; that is on hauling road leading to where he was found, leading to third north entry off of main east entry." That is the end of the notes I took. At that point is where I found indications of an explosion. It showed that the explosion started from room No. 1, from the two heavy shots. Front shot blown out started up all the dust in the room, and when these other two shots went off, gunned back, it started the explosion from the particles of coal and dust in there, and intensified on its way out, and these two shots were the cause of the explosion.

Q. (by jury). Who was to blame?

A. I would not like to say who was to blame. I believe that would be too far for me to go. I would rather decline from saying who ought to be blamed. I have described the shots.

Q. You have been in the mine before this accident happened?

A. Yes, sir.

Q. In what condition did you find the air?

A. Practically in good condition. There was long distances between the cross-cuts in one or two places; hard to make connections.

Q. (by Coroner Porter). As State Superintendent of Mines, it seems to me you ought to be an expert in mining matters, and it seems to me that you ought to be able to give an opinion.

A. I admit that I have an opinion. I believe that this jury ought to find the opinion. They might lay weight to my opinion.

Q. (by Coroner Boaz). That is what you are here for. The jury do n't know anything about this business except from the evidence given. You are the man we look to for an opinion.

A. I would add that 2 and 3 were unlawful shots, and ought not to have been fired. The shot-firer should have left those two shots. Possing was firing that run and was found dead in that run. He had not ought to have fired those two shots.

Q. (by jury). Do you consider that miner a competent miner?

A. He may have been, but he did n't leave a practical shot there for the other man to fire. When a shot-firer leaves a shot they usually come back on the firer, and curse him and scold him and say that he ought to have fired that shot. They get so they take more risks and fire when it was not what it ought to be.

Q. The shot-firer is protected for refusing to fire those shots?

A. Often parties shot-firer is working for do not protect him.

Q. You think the miner should not fire unlawful shots?

A. Yes.

Q. Do you think the firer ought to know unlawful shots?

A. If he took any notice of them, he would have known they were unlawful shots.

Q. What is there about a blow-out shot that will produce combustion such as they had here?

A. The supposition is that shots Nos. 2 and 3 both gunned back, and the air had been stirred up by the other shot and the room was then full of smoke and particles of coal-dust, and when these other shots were fired the explosion occurred.

Q. The explosion was then due to dust?

A. Particles of dust and possibly powder smoke added to it, so that it became inflammable, and gathered from the coal-dust that it picked up along the road as it went.

Q. Powder smoke is combustible, is it not?

A. It is explosive.

Q. Was this mine here a good mine for safety—air and so on?

A. One of the best-equipped mines in the state; air good, machinery, air-shaft, all equal to any mine in the state.

Q. (by Coroner Boaz). If the entries had been properly sprinkled and all, and the dust kept down, do you think the explosion would have occurred?

A. I think if the mine had been quite wet it might not have been so large, but think there was elements enough in the room to make an explosion. But if it had been real wet would not have been as much force to it.

Q. (by jury). Is there a state law requiring mines to be sprinkled?

A. They are expected to sprinkle all the roadways and keep the dust down.

Q. That is the law?

A. That is the law.

Q. (by Coroner Boaz). How often does the law require that?

A. Do n't remember if it specifies the number of times it shall be done.

Q. Does the company have to report to you the condition of the mine any number of times?

A. Supposed to fill out an air blank monthly, stating the condition of the

mine; supposed to examine the air-course twice a week. I think this company has done that. I have air blanks from the company. I could tell by hunting through the air blanks that are filed.

Q. (by jury). Is it your duty as State Mine Inspector to examine into the cause of the explosion?

A. Yes, sir.

Q. Without being notified?

A. Yes, sir.

Q. Who will you report to on this?

A. To the governor of the state, Governor Leedy, my findings. I will probably take more time. I will go back to the mine in a day or two and go over the balance of what I did n't go over to-day. But I think I got all the main points in connection with these parties who were killed.

Q. In the ordinary course of business, who would know of the way those two shots were put in, No. 3 and No. 2 you speak of, after they were put in and before this accident happened?

A. The shot-firer would know. He would be most likely the first man to see them after they were put in and before they were fired.

Q. Would nobody have known it except the man who drilled the holes and the shot-firer?

A. If the miner had taken particular notice of them, he would have known. If I had been going through the room, I might have noticed it.

Q. Would anybody be around there to look at those holes?

A. Not ordinarily; other miners would have no business in there.

Q. In the ordinary work of the mine, nobody would be supposed to be in that room except the man who drilled the holes and the shot-firer?

A. No, sir.

Q. Nobody would have any means of knowing about them?

A. Generally speaking, no, sir.

Q. The way the holes were drilled was evidence that the miner who was working in that room was greedy, and wanted to get a lot of work done with a little bit of powder, was it not?

A. I could not say; I do n't know how much powder he had.

Q. They were not carefully prepared holes, were they?

A. No, sir.

Q. Would you not suppose, from your experience as a miner, that he put in shot No. 3 for the purpose of getting out lots of coal with that one shot?

A. Yes.

Q. In your opinion, the explosion originated there in the room where those three shots were fired?

A. That was the starting-point of the explosion and from there it spread.

Q. Did you notice any evidence of fire except on the line that fire would have gone from that point to the shaft?

A. On no other point only there.

Q. In your judgment, if the fire did originate as you have described, there at that place, the coal-dust being stirred up and circulated in the air added to the force of the explosion?

A. Yes; it helped to make it more so.

Q. Your opinion is that it added particularly to the blaze and flame there?

A. Yes, certainly added some to it.

Q. That coal-dust itself would not have exploded without the gunning shots?

A. I don't think it would had it not been stirred up by those shots.

Q. If the coal-dust had been practically absent from that mine, would the same amount of after-damp have been generated by the gunning shots that was generated?

A. No, not so much after-damp.

Q. Then the presence of the coal-dust produced after-damp?

A. Assisted to produce it.

Q. In what way?

A. By being ignited and consumed.

Q. What you call after-damp is the result of combustion or fire, is it not?

A. Yes, sir; it comes after that.

Q. If there had been no dust in the mine at all, do you suppose that Possing would have met practically the same death?

A. There might not have been so much fire had the dust been absent.

Q. A good deal of that fire came from powder that was tamped into those shots?

A. Yes, sir.

Q. The gunning shots sent out all of the powder that was tamped in there and blazed as it came out?

A. I don't know.

Q. The powder came out blazing fire, and then anything that was in line of it would have been burned, without reference to whether there was any coal-dust there or not, would it not?

A. Any light substance might have been scorched or burnt.

Q. If a man had been standing fifteen or twenty feet in front of that room, would he not have been killed almost instantly?

A. Might have been. The worst indications of fire was outside of the room where these shots were fired. The timbers in the room were scorched. Outside they were scorched also.

Q. (by jury). The fire gathered volume after coming out of there?

A. That is my opinion. Gathered dust and intensified it.

Q. Do you think any fire reached the foot of the shaft?

A. Looks as though fire came out of it. The posts around the bottom show they had not been burned with fire. Top of shaft shows that timbers up there were burnt and charred.

Q. Do you consider shot-firing dangerous work—more dangerous than other mining?

A. Yes, shot-firing is more dangerous work.

Q. Do you know of any examination a shot-firer has to go through with?

A. The law provides that the mine foreman shall hire competent shot-firers to do shot-firing. It is left to his judgment whether they are competent or not. Mine foreman wants to get practical firers and men of good judgment.

Q. Is it his business to go around and inspect the work?

A. Not particularly so. The law does not require him to go from place to place.

Q. How does he know a man is a practical shot-firer?

A. He may have known the man some little time. He may know him from reputation; may have heard of him from this company or that company.

Q. Is it his duty to follow up reports and find out whether he is a competent man?

A. He generally finds it out in a little while. The men or miners he is firing for report him if he does not do good work, or do something so that his attention is called to the fact.

A. K. CRAIG, being first duly sworn, testified as follows:

Q. (by Coroner Boaz). What is your name?

A. A. K. Craig.

Q. (by Coroner Porter). What is your occupation, Mr. Craig?

A. District superintendent of the Western Coal and Mining Company.

Q. Have you visited the room in which you suppose the explosion to have started?

A. Yes, sir.

Q. Describe to the jury, please, what caused the explosion; what you think about it and how it started.

A. The origination of the explosion, I think, was in room No. 1, north entry on east side of shaft; cause, two blown-out shots.

Q. You may state to the jury the condition in which you found room No. 1.

A. Well, in the first room off of the fourth north entry there were three shots prepared by the miner, and all three of those shots were fired, the shots 1 and 2 being on the right-hand rib or the south side of the room, and No. 3 shot being on the north side of the room. The intention of the one who prepared shot No. 3 was to make a break-through into room No. 2, which is on the left-hand side of room 1. Shot No. 1 was the shot that was intended to free or to extend the chance of shot No. 2, as one shot was turned ahead of the other. Shot No. 1 did its work well. It blew the coal for a distance of not less than twelve feet from where it was originally. Shots Nos. 2 and 3 were not prepared to give the powder a chance to do work well. I believe that I stated that 2 and 3 were windy shots or blown-out shots. They are the same thing.

Q. (by Coroner Boaz). How many break-throughs were there in this room?

A. Two or three. I am not positive; two that I know of.

Q. Were either of them closed up?

A. I did n't examine any of them only the one nearest the face. That was open, and it was right that it should be open.

Q. You do n't know whether the other was closed up?

A. I do n't know.

Q. What is the rule about the break-throughs?

A. As a general rule they are closed up. The break-throughs between all entries, I believe, are well stopped. It may not be practice to close up all break-throughs in a room, but whenever it is found necessary to close up a break-through in order to advance the air to the face I think it would be done.

Q. Is there any law in regard to closing or keeping open these break-throughs?

A. Yes, sir.

Q. How many are required to be left open?

A. One, nearest the face; and a new one must be made before the old one is closed, so as to give perfect connection from the main shaft or from the air-shaft. It depends on which shaft is being used for exhaust.

Q. You do not know whether the other break-throughs were closed up?

A. No, sir; I did not examine them. From what I saw from going through the mine Saturday evening, I think the force of the explosion opened nearly all of the break-throughs or blew out nearly all of the stoppings.

Q. (by jury). How far apart are these break-throughs?

A. Various lengths and distances. If the miner strikes a fault, it is a little nearer or farther. If they strike a horseback, it is sometimes best to make a break-through on the inside of the horseback.

Q. (by Coroner Boaz). In this particular case, what effect would the failure to close these two break-throughs from the face have on the explosion?

A. None whatever, in my judgment.

Q. (by jury). You spoke of those two shots not being well constructed; would you consider those dangerous shots if you had seen them before they were fired?

A. Yes, sir; if I had stopped to examine those shots I would not have fired them. If I had been a shot-firer I would certainly not have fired the shots, if I had stopped to examine them.

Q. (by Coroner Porter). Should the pit boss or any of his assistants have known of the condition of these shots?

A. No, sir; not necessarily so. When the pit boss hires the shot-firer he is generally questioned as to his experience; that is, as to what experience he has had; and many times pit boss makes inquiry. The statements that he obtains from other parties as to this man applying for a job as shot-firer, as to his ability—he allows that to govern his judgment to commence with. If he has a reputation of being a good shot-firer he allows that to be his judgment as to whether he shall hire him or not, and then after he has fired a few times nobody finds it out quicker than the miner, as to whether he is a good firer; and then nobody finds it out quicker than the pit boss as to whether he is a good or bad shot-firer.

Q. Is a shot-firer allowed to use his discretion in the shots that he fires?

A. Yes, sir. I consider when the five o'clock whistle blows that is notice that the miners should cease work. Of course, the miners inside cannot hear the whistle. They know when it is five o'clock, though, for the drivers quit running. The miner is then supposed to stop. Between that time and six, the shot-firer is supposed to begin his work. He should use his judgment as to whether a shot is prepared properly or whether he should fire it or not. He has the right to say whether he shall fire it or not. For the information of the jury, I will say that I have heard of cases where the shot-firer has refused to fire shots; and I never knew of a time where he did but what he had the full support of the company he was working for. The miner who prepared the shot will kick because he loses his powder, but the shot-firer is really in charge of the mine until he is through firing the shots.

Q. (by jury). Did you ever know of a case where the miner would ask why his shot was not fired?

A. Yes, sir. There have been times where the shot-firer has not fired, and that miner thought that his judgment was good, and the shot-firer did not think so, and the matter came up before the pit boss and superintendent. Of course, when a miner loses three and a half feet of powder it represents so much money lost, and he naturally would have a kick coming.

Q. You know nothing about in it this particular case?

A. No, sir.

Q. How far was this break-through that was open from the shots in this room?

A. You mean the cross-cut, the last open—the one that I saw open? Thirty-eight feet from that one to the one they had fired the shot for, and it was probably fifteen feet to the face.

Q. (by Coroner Porter). Did you see any evidence of dust explosion or the combustion of dust?

A. No evidence of dust. The explosion was caused from two blown-out shots.

Q. Was this force transmitted to the dust that was there?

A. When a shot is fired it would stir up the small particles, and very fine

flour dust that is in the mines will become suspended, and coming in contact with flame would naturally burn.

Q. Now, the miners or operators or the company, are they responsible for the condition of a miner's room; are they expected to see that there is not a large amount of dust in the miner's room?

A. A miner is responsible for his room so many feet back from the face of the coal, and you will find more dust in there than you will find in any other part of his room.

Q. The law does not contemplate the sprinkling of any part of the mine except the driveways?

A. If the law provides that this mine or any mine in the state of Kansas shall be sprinkled for the purpose of preventing an explosion or anything else, I do n't know it.

Q. Is it customary for the company to sprinkle?

A. In many cases it is. It makes better roads. When the mine is dry, and mules running over road makes holes, and makes bad traveling. Sprinkling to avoid that. The drivers then make better time. That is done quite often; probably in all mines of any consequence in this district.

Q. In your judgment, that room was properly ventilated?

A. Yes, sir; I think it was all right. I do n't think there is another mine in the state of Kansas or west of the Mississippi river better equipped below or on top than mine No. 5 at Chicopee, Kan.

Q. You think this special room was properly ventilated?

A. Yes, sir.

Q. (by jury). Then you think those two windy shots caused the explosion?

A. Yes, sir. If the firer had stopped when he came to these two shots I do n't think there would have been an explosion. If it was not done by these two shots, why did n't the shots behind these cause the explosion? There is just as much dust in one part of the mine as there is in another where coal is mined.

Q. Was shot No. 1 prepared to work in workmanlike manner?

A. Yes, sir; and it did its work well.

Q. Did it tear the coal up and make much dust?

A. It was mine-run coal.

Q. I do n't know the meaning of that term.

A. I mean that it was about sixty-five or seventy-five per cent. nut and slack and the balance lump.

(By Coroner Porter). [Reads from the Session Laws of 1897, chapter 149, sec. 41; reads to the jury from the book.]

Q. In your observation in coal-mining in this district, where the coal is mined by the use of powder, what has heretofore been the purpose of the sprinkling of the hauling way?

A. For the purpose of packing the roads.

Q. What condition was found in case that was not done? Would the dust arise and make it uncomfortable for people?

A. Yes, sir; and for drivers hauling the coal. It is better to moisten the road.

Q. This is done to make a solid road?

A. Yes, sir.

Q. Do you know any way by which a shot-firer who should come into a room and find one or more shots tamped and ready for firing could tell with certainty whether any of the shots would be a gunning shot or not?

A. I think to a great extent he could, by examining the shots thoroughly to see if they were safe to fire.

Q. Could a miner tell how deep the drill hole was by looking at it after it is tamped?

A. If he could needle his hole to the back he could. If tamped, hard to tell.

Q. Could he tell without taking the tamping out or else shooting it off?

A. Not with the tools usually used by miners.

Q. Did you ever see any tools in this section of the country which a miner could use and tell the depth of drill hole?

A. No, sir.

Q. Then he don't know how deep it is looking at it, and don't know how much powder is in it or at what angle it is drilled?

A. No, sir; only that portion of the hole needle is in.

Q. He can't tell how much powder there is in the hole?

A. No, sir.

Q. If he can't tell by looking at the face of the coal or examining outside end, how can he tell whether it is a safe shot?

A. The position the needle is in gives him the direction the hole is drilled—gives him the angle the hole is drilled; then he can form his opinion as to whether the shot is able to do the work or not.

Q. If he don't know how deep it is or how much powder there is in the hole, how can he tell?

A. He can form an idea by the chance he has. If it is a short chance, the hole is not so deep nor so much powder.

Q. What is a chance?

A. A portion of the coal stands back from the main face of the coal. Want it off of side for an entrance. Always one shot put in in advance of the other. That will tell you.

Q. From that can you conclude how deep the hole is drilled?

A. You can.

Q. You would only go by customary depth?

A. Yes, sir.

Q. Then a shot-firer could not know with certainty the depth, angle or how much powder in the hole, and therefore could not absolutely conclude how much of a break-off shot was intended to make?

A. He could discern the angle of the hole, the quantity of powder used; but could not tell positively about the powder. A great many of the holes are not tamped and the shot-firer has to tamp them.

Q. Can a shot-firer, by examination of a hole already tamped and ready to be squibbed and fired—can he tell with any degree of certainty whether it will be a gunning shot when it is fired?

A. I believe as a general rule, if he stops to consider, he can.

Q. That would require careful observation, would it not?

A. Yes, sir.

Q. Is it not true that a shot-firer should exercise his own judgment as to whether he should fire a shot that is tamped and ready to be fired, and that among ordinary skilled miners the miner before drilling the hole should exercise care and skill and observation in determining where to drill, how deep, and how much powder to put in the drill hole?

A. Yes, sir.

Q. Would he not be more cautious if he was going to fire it himself?

A. That might be true in some cases.

Q. (by jury). Is there any reasonable limit to the amount of powder a miner should use?

A. Yes, sir.

Q. What is a needle? Are these needles used to ascertain the depth of the drill hole or for what are they used?

A. No, sir; they are used when the powder is put into the hole. The needle is inserted, and that punctures the cartridge in which the needle is left, and after tamped the needle is withdrawn, leaving a channel from the face of the coal to the powder.

Q. Does that needle extend away back?

A. The miner will insert the needle into the powder sufficient to insure a safe shot.

Q. (by Coroner Boaz). When a shot firer ascertains the amount of powder in a hole does he really know the amount or does he guess at it?

A. There is not a man in the district but calculates in his mind when he goes to load a hole about what is necessary to produce good work. He puts in so many inches of powder. They generally know what it requires to do the work.

Q. Sizes up about the amount of coal that the shot is to blow out?

A. Yes.

Q. (by jury). You said a shot-firer could tell whether a shot would be good or bad. When a man applies to you for work as a shot-firer, what do you examine him on?

A. He is not examined. We simply question him; find out where and how long he has fired. We refer to some of the parties for whom he has been working.

Q. No shot-firer is a good shot-firer unless he is a good coal digger first, is he?

A. That is right; he must be a practical coal digger; but very many practical business men will sometimes make a mistake.

Q. (by Coroner Porter). What force would you expect to get more than the increase in the volume and lightness of the air in the explosion?

A. That is hard to determine. In order to answer that question you would have to know or assume the quantity of fuel that would be burned.

Q. I did not mean the air. Would you get any force other than the expansion of the air?

A. No, sir.

ANTHONY GALLAGHER, being duly sworn, testified as follows:

Q. (by Coroner Porter). Mr. Gallagher, what is your occupation?

A. Well, in the present time I am employed in the capacity of company man in mine No. 5.

Q. What has been your duties recently?

A. To examine some of the entries in the mine and see if there is any faults; attend to some timbering if necessary, and look after the general ventilation in the mine.

Q. Do you know the condition of that room as to the ventilation?

A. No, sir; not my duty to examine rooms that I know of. I am supposed to fix doors, so that the air may circulate as near the face as possible; but it is impossible for one man to attend to it.

Q. Whose duty is it supposed to be to fill up break-throughs? the miners?

A. Supposed to be any one's duty who is told by the boss to do it.

Q. Do you know anything about the condition of the entries leading to No. 4 in regard to dust?

A. I have been in there recently, and my observation in going along there, fourth entry off of east side, I could not see any great amount of dust laying around there—slate, coal, etc., laying along the track.

Q. Do you consider the roadway dusty in this particular entry down to the shaft?

A. That entry do n't lead to the shaft; leads to the main. So far as the fourth entry is concerned, do n't consider it dangerous as far as dust is concerned. Have not paid much attention to it; not my duty to examine for dust, but may come under my observation on my rounds some time.

Q. (by jury). Did you say any part of your work was to fill up these openings in these rooms with curtains or dirt, or whatever it might be?

[Witness asks, "Are you a juror?" Juror, "Yes, sir."]

A. Yes; the law determines that those break-throughs should be filled up or made air-tight, and I am the only one in that mine who has been looking after the ventilation of the mine, and my duty is to look after those break-throughs and fill them up.

Q. Did you fill up any in this room?

A. I only filled up between entries; have not seen any break-throughs between any of the rooms.

Q. Did you ever examine the air in this special room; you say you look after the air and see if the ventilation is good?

A. Not specially in that room; not my duty to go into them except when called.

Q. (by Coroner Porter). Do you mean to say that it is the miners' duty to call your attention to the air if it gets bad?

A. They generally do. The law prescribes the duty of the mine foreman.

Q. (by jury). Whose duty is it to see that the mine is in good condition?

A. It is the duty of the mine boss in charge of the mine. I am not the mine boss. I am engaged as a day hand, but my duty is to look after the ventilation.

Q. Then, if the air was to get bad, would the miner report it?

A. He would report to the mine boss, and the mine boss would probably tell me, and I would go and see if I could remedy it.

R. Q. What was the condition of the mine as to ventilation in a general way?

[Witness asks, "Who do you represent?" A. "I am a representative of the Mt. Carmel Coal Company."]

A. The general condition of the mine as far as ventilation was concerned was what I considered good, with the exceptions of some rooms that was drove further in than the law required without break-throughs.

Q. How many such rooms did you know of?

A. Never made memorandum of them.

Q. Did you report to any of your employers having found such rooms?

A. My employers were around the rooms as much as me, and if I had said anything to them about it I would politely be told none of my business.

Q. You say you did not tell any one else of any such rooms?

A. I did not on this occasion; might have done some time previous.

Q. Are you acquainted with many other shafts?

A. I have been in every coal-mine in the state of Kansas.

Q. How does No. 5 compare with the other coal-mines in Crawford and Cherokee counties?

A. The general condition of this mine is good.

THE INQUEST.

Coroner Porter impaneled a jury at two o'clock yesterday afternoon to investigate the immediate cause of the death of Charles Winters, John Possing, and Anton Weinberger, the three victims of the mine disaster.

The jury is J. A. Beach, of the "Regulator" store; Dr. Wm. Williams; L. T. Huffman; C. E. Grandle and H. C. Kaylor, school-teachers; and W. A. Biggs, a farmer.

The testimony of J. R. Bell, underground superintendent of Chicopee and Frontenac mines; Ed. Flynn, pit boss; James Russell, miner; A. B. Kirkwood, superintendent of the Wear Coal Company's properties; and Dr. H. C. Gregg, the company doctor at Chicopee, was received yesterday, after which an adjournment was taken until eleven o'clock this morning.

JAMES RUSSELL, an entry driver, who helped to find the men as soon as the mine could be entered, testified:

Q. (by a juryman). Is there anything besides gas which will explode?

A. I don't know.

Q. Was there much dust in the mine?

A. Never dusty when I worked, although shaft was pretty dusty sometimes. When gas is found in a drill hole it is not considered dangerous. Charles Winters was found at 2 A. M., January 9. One body was found 800 feet from main shaft on east side. A windy shot may or may not cause an explosion like this one. I work in the second south and east entry. I was slightly acquainted with Possing, who lies there dead.

J. BELL, underground superintendent for the Mt. Carmel Coal Company both at Frontenac and Chicopee, testified:

On Saturday morning before the explosion air was good in this mine; have sprinkled the mine regularly, generally at night; do not know whether it was sprinkled the night before. I was lowered to the bottom by a rope; found the doors of the cross-cut broken; found the dead men as follows: One in first west room off second north entry, east side, 1200 feet from shaft; one in room on east side, and one in room in north entry on east side. Door on east side of main entry was blown in; have no idea where the explosion started; found one tin can with two pounds of powder in it; some of the men were overcome with after-damp; don't know anything of the chemistry of gases. The man with the burned hand was found in the fourth north entry of the main east; was at switch, lying on right side; room is 450 feet north of main east.

DR. H. C. GREGG, the company's physician at Chicopee, (succeeding Doctor Germain January 1,) testified:

First saw bodies in the mine in the main entry; was within three hours after explosion; did not hear of explosion; was sitting in east room of my office in Chicopee; when found the men were dead; noticed no indications as to cause of death; one was badly burned; this was sufficient to cause death; did not examine them closely; noticed a little blood on one's lower lip; asphyxiation might or might not cause hemorrhage; blood clot probably caused by injury; have no opinion as to cause of death; saw no evidences of asphyxiation by gas; did not make very close examination; other physicians did, and took their word. [Here he said to the lawyer, defiantly, "Do I have to express my opinion?"] I was here to care for the injured and not to examine particularly; do not know the immediate cause of the death.

A. B. KIRKWOOD, superintendent of the Wear Coal Company, arrived on the scene soon after the explosion, and as soon as the air was cleared a little he went to the bottom. He testified as follows:

I found an explosion here; had heard report; arrived here about 7:30; saw top of mine wrecked more or less; noticed men below on bottom in main shaft;

considerable work done on top; some temporary repairs made on fan house; roof of it was blown off. In company with several others tried to get down in fan house in the air-shaft, and finally Craig, Bone, Nugent and I went down in the air-shaft to the bottom; first tried to go in on the west side; main air-courses leading from the air-shaft; noticed as we went on that side air was very weak, and that powder smoke and after-damp was stronger on that side than on east side of air-shaft. We then went on east side air-course to the cut-off leading to the overcast, thinking to get through there to the bottom. Finding the overcast all bratticed up we came back to the air-course leading east again, and went out to the first north entry just in front of mule stable; saw two mules tied up to piece of water-pipe standing in the north entry; seemed to be badly burned.

We went into mule stable and made casual examination of it, thinking some one might be in there. We found no one. Noticed three mules in the stable; one of them was standing up and two of them were lying down; did n't see any evidence of fire in the mule stable, but there was hay lying all around that did n't seem to be scorched. Then went through on the main entry; found a trap-door partly broken; found Mr. Fletcher there, the first man we met; noticed pit cars broken, piled up in the bottom; also two mules, one standing up; the results of explosion seemed to be much worse on the east side than on the west side, judging from bottom of shaft. I think Mr. Fletcher, Mr. Craig and I then tried to get to the face of east main entry; got as far as the fifth south entry, I think. We were quite a distance in advance of men who were putting in temporary stop in main entry. Mr. Fletcher had a safety-lamp with him testing gas; examining air for gas as far as we could go; did not find any gas; then went over on the west side; went in the first north entry, probably 400 or 500 feet; we met some parties coming out who had been up in that portion of the mine.

That's about as far as I went on that side of the shaft; sat there about twenty minutes, I guess. Mr. Fletcher and the other men went back into the second west off the first north; I was still there when they came up bringing one of the bodies with them. Saw no indications of flame or fire; did not seem to be burned; didn't see a mark upon him except a little froth on the mouth; considerable after-damp in the air; air was hotter than after ordinary firing of shots, because no current of air was secured; had naked lights in the pit. Fan was started before I went down into shaft. Had not determined whether the explosion had been from the east or the west; though it started from the fourth north; would not give an opinion from superficial examination; have no opinion; I don't think it was gas; I don't think dust would explode without another agency.

A keg of powder is twenty-five pounds; would make a large explosion. We looked at some of the powder boxes in the first room of the fifth south, or in the back air-course going east; powder tins turned over and powder spilled upon the ground; was not burned. Noticed the bodies of the three men; noticed the burned man. He was found in the fourth north entry on the east side. The other bodies were not burned. This man John Possing seemed to have been struck. One body found 500 feet north; Winters 700 feet south and about 600 west. Noticed no kegs of powder; everybody paying more attention to getting out the dead than to looking for evidences of the cause of the disaster. Possing was lying on his right side, as if he had dropped from standing position.

Q. Was body in position to indicate that he fell from standing position?

A. Probably dropped from standing position. Mr. Craig and I examined a prop, and found it thickly covered with dirt, indicating its being blown there. Winters was in the back entry, head lying toward the cross-cut, as if making there. There was a squib box. Head, arms and hands very much burned.

BEN SHIRARD, the man who was first to come out of the shaft after the explosion, attended the inquest Sunday; testimony as given by him:

Live west of Pittsburg; have been shot-firing one month yesterday; live west of No. 20 mine; two miles west of Fourth street; was in the mine Saturday night shot-firing at No. 5; I had started in first south entry on west side of shaft; finished on the first south, and went through cross-cut to the second south into last room on second south next to the face; had two shots in last room; one was tamped, the other one was left for me to tamp. I started to tamp the hole, and as I got about half through I felt hot air; felt it in my ears; knocked me a little deaf. I turned around; saw a little smoke coming; thought it was dust at first; finished tamping hole and squibbed both shots, and I had a shot missed in the first; I thought I would go back into second south and fire it until the smoke cleared away; after coming out of room went into entry; I saw the smoke getting thicker; held my lamp out and saw no air coming; on other nights a piece of paper would be blown away; I had no idea of an explosion; I thought some other shot-firer had a windy shot that had blown down one of the doors or the brattices which kept the air from coming up; I went into the first south at face of entry and found shot I missed; squibbed it and lit it; came back through the cross-cut in the second south: got out far enough so the shot would not catch me; held my lamp out again while waiting and saw there was no air coming; the shot went; after the shot went I went into the room where I had the two shots squibbed; lit both of the shots and both went; by that time smoke was getting so thick that I thought it was time for me to get out.

I went 200 or 250 feet where the smoke was n't so bad, but after that it was getting so thick I would fall every step I took; explosion did n't blow my light out, but it did n't do me any good; I could see nothing, smoke was so thick; I found my way out by holding to the rails and guiding myself out. When I got to the cross-cut then it was clear; that was about 200 feet from the mouth of the first south; as soon as I got to the cross-cut I fell; I lay there about two minutes. Then I had strength enough to go on. [To a question.] No, sir; it was not powder smoke. I have been through powder smoke at No. 20. It was a sulphur smoke. It was a black smoke; powder smoke is blue. Did n't find any there like it except around smelters. Got up about half way of the manway and there was some more smoke standing; then looked; saw I could not get through the smoke so went back to the bottom; everything clear there; clear as any time; I went to the shaft and called up to some of the boys; asked them if I could get on the cage. They answered no; they were not sure about the cage. They asked me if I was all right; I answered yes, I was n't hurt; I told them to keep everything all right and not drop anything and I would climb up, which I did. Six of us shot-firers went down at the same time. On one side, myself, Joe Zetter, and Tony Weinberger, and on the other side, Jas. Zimmerman, John Possing, and Chas. Winters. Do n't hardly know cause of explosion; think it was a blow-out shot; not enough gas in there to cause an explosion.

Q. When did you notice peculiar color of smoke?

A. Right after I fired two shots; got pretty dark and thick; did n't hear explosion; no sudden move at all; when I saw the air was not working I thought it time to get out; I was 1200 feet from bottom of shaft.

THE VERDICT OF THE JURY.

The verdict of the jury in the coroner's investigation was returned yesterday, January 11, 1898, and the evidence of a number of witnesses was taken. Among those who testified were J. C. Fletcher, superintendent of the Mt. Carmel Coal

Company's mines at Chicopee and Frontenac; James Zimmerman, the man who lived in the mine for fifteen hours after the explosion and escaped alive; Tom Flynn, who was among the rescuing party; State Mine Inspector McGrath, and many others. The testimony being all in, the jury returned the following verdict:

We, the jury, find that the dead bodies are those of John Possing, Charles Winters, and Anton Weinberger, all shot-firers at No. 5 of the Mt. Carmel Coal Company; that the said John Possing, Charles Winters and Anton Weinberger came to their death by an explosion caused by gas generated from two windy shots supposed to have been fired by said John Possing; that the cause of said Possing's death was the result of burns received from the flame of said shots; that the cause of the death of Charles Winters and Anton Weinberger was asphyxia resulting from the effects of said shots fired by said Possing. We further find, that the said explosion was intensified by dust gathered in the rooms where the said Possing had fired previous shots in rapid succession.

(Signed)	J. A. BEACH.	C. E. GRANDLE.
	DR. WM. WILLIAMS.	H. C. KAYLOR.
	L. T. HUFFMAN.	W. A. BRIGGS.

A map showing the underground workings of this mine may be found between pages 16 and 17 of this report; also a record of the inspection on pages 13-15.

THE LEAVENWORTH COAL-MINE.

To his Excellency John W. Leedy, Governor:

HONORED SIR—I herewith respectfully submit for your consideration a report of my inspection and survey of the coal-mine owned and operated by the Leavenworth Coal Company, of Leavenworth, Kan., of which John E. Carr is superintendent, and which mine is supposed to be located on or under a tract of twenty acres on the southeast corner of the government military reservation in Leavenworth county, state of Kansas.

On June 5, 1897, I communicated officially with John E. Carr, superintendent of the above-described mine of the Leavenworth Coal Company, and requested him to furnish me with a map of this mine, as provided by the laws of Kansas. To this request and communication I received no reply. Soon after that time I officially visited this mine and inspected it, and while on this official visit I called Mr. John E. Carr's attention to my request for a copy of the map of this mine, and in answer he stated that they had been and were still very busy building a new pit tower, and as soon as he could get time to do it he would have a copy of the map prepared and sent to me.

Some time later, in the latter part of September, 1897, I was notified of a fatal accident in this mine, and again visited it. At this time I again called Mr. John E. Carr's attention to my request for a copy of the map which he had formerly promised but had not yet delivered to me, and his answer at this time was that they were still very busy and he had found no time to prepare the copy of the map. I then asked Mr. Carr if he had any objections to me having a copy of the map made. In answer, he said "No," but that he would go to work and have a copy of their map made if he found time to do so before I would begin to have one made.

On the 13th day of October, 1897, having received no map of the mine, I proceeded to have a copy of their map made for my official use, and had one made.

On procuring this copy and carefully examining the same, and having previously familiarized myself with the underground workings of the mine, I became satisfied that the map did not fully represent the extent of the workings, and, being unable to establish my belief without an actual survey of the mine and its environments, I proceeded without unnecessary delay to have such survey made.

A part of the older workings of this mine are closed and abandoned, and are consequently inaccessible to a resurvey. To the extent

of these closed and abandoned parts I have accepted the representations made by the company's map; and some other parts exhibited by their map, although not closed and abandoned, I believed to be sufficiently represented and made no resurvey of them. But such parts of this mine as I believed to be inaccurately represented I had resurveyed, and the results are exhibited on the accompanying blue-print copy of the map made from this resurvey, and fully justify my doubts as to the inaccuracies of the company's map.

The survey for determining this work was conducted under my directions and in the following manner:

On the southwest corner of Dakota and Second streets and also on the southwest corner of Ottawa and Second streets in the city of Leavenworth and state of Kansas are two officially established corners whence official surveys are extended and are described thus: On the southwest corner of Dakota and Second streets, "the northeast corner of brick building marked thus, X"; on the southwest corner of Ottawa and Second streets, "notch in stone wall marked thus, X."

From the above officially established points we produced the west line of Second street north to its intersection with the south line of the government military reservation, in Leavenworth county, Kansas; thence east on the south line of the above reservation one hundred and twenty-five (125) feet; thence angle twenty degrees and ten minutes left ($20^{\circ} 10'$) for three hundred and thirty-nine feet and ten inches ($339' 10''$); thence angle forty-five degrees and forty minutes ($45^{\circ} 40'$) right for thirty-two feet and six inches ($32' 6''$), at which point is the west line of the main shaft of the north cage communicating with the underground workings of the aforesaid Leavenworth Coal Company's mine.

The survey of the underground workings was connected with the above written location or "top lines" by plumb lines of copper wire hung in the above-located main shaft.

This main shaft is situated about two hundred and fifteen (215) feet west from the west bank of the Missouri river. The underground workings extend eastward from the west bank of the Missouri river about one thousand two hundred (1200) feet under the river-bed. Approximately parallel to the river bank and in the direction of the course of the river, the workings extend about five thousand (5000) feet northward from the shaft aforesaid, and about seven hundred (700) feet southward from said main shaft—all under the river-bed. The remote boundary line of these underground workings under the river-bed is irregular.

The exact area of these workings under the river-bed, as ascertained by the accurate survey which I have caused to be made of them, and as shown by the accompanying blue print of map, is five million two

hundred and nineteen thousand two hundred and two (5,219,202) superficial feet, equaling one hundred and nineteen and four-fifths plus ($119\frac{4}{5}+$) acres. These measurements were ascertained by triangulation. From this survey made and exhibited as above written and as exhibited by the accompanying map, it seems that the Leavenworth Coal Company has been mining largely on the property of the state of Kansas, and, with this belief, I would respectfully invite your excellency's attention to the subject on behalf of the state of Kansas; and if, as I assume to be the case, the river-bed of the Missouri river or any part of it at this place is the property of the state of Kansas, the state may be entitled to some remuneration for the coal removed from beneath the river-bed by the aforesaid Leavenworth Coal Co.

Assuming that the above-named coal company has trespassed on the property of the state of Kansas, I have made accurate measurements of the thickness of the coal-vein at seventy-four different points, distributed over the south and east portions of the workings, as shown by the accompanying map, and I find the actual average thickness of the coal-vein to be twenty-three and one-fourth ($23\frac{1}{4}$) inches; but I have used as a basis for the calculations hereafter made only twenty-two (22) inches, allowing one and one-fourth ($1\frac{1}{4}$) inches for sulphur, etc. I have also for these calculations assigned eighty (80) pounds as the weight of one cubic foot of coal, solid, or one bushel of coal for each cubic foot of the solid coal mined in these workings. Although authorities assign eighty-four pounds to the cubic foot of solid bituminous coal, I prefer to assume a lower basis on which to calculate, so as to be safely within the lines of fact.

With these bases for my calculations, I find the following results: 5,219,202 superficial feet multiplied by $1\frac{5}{8}$ feet, average thickness of coal-vein, equals 9,568,537 bushels of coal, or 38,274 $\frac{1}{2}$ tons; averaging 79,870 $\frac{9}{16}$ bushels of coal per acre.

I believe that two and one-half mills is the minimum royalty paid for coal-mining privileges; at this rate, the royalty on the quantity of coal mined on what I assume to be state property by the Leavenworth Coal Company, as exhibited by the accompanying map, would amount to \$23,921.34 $\frac{1}{4}$. This would make a rate per acre of \$201.34.

Referring to the rate of royalty, I believe five mills per bushel would be just and fair. At this rate of royalty, the state would be entitled to receive the sum of \$47,842.68 $\frac{1}{2}$ from the Leavenworth Coal Company. Accompanying this report I present bill of expense incurred in survey. Very respectfully submitted.

GEO. T. McGRATH,

State Coal-Mine Inspector.

Topeka, Kansas,

December 6, 1897.

MINES LEASED.

In answer to an inquiry as to the number of mines the Kansas Commercial Coal Company had leased, the term of lease, and the amount paid for privilege of lease, the Inspector received the following reply:

KANSAS CITY, MO., September 21, 1897.

Geo. T. McGrath, Esq., State Mine Inspector, Weir City, Kan.:

DEAR SIR—Replying to your favor of 20th, would say that we have the following properties leased:

Columbus Coal Co.....	One mine,	Columbus, Kan.
Hamilton & Braidwood.....	“	No. 2, Weir City, Kan.
Hamilton & Grant.....	“	Weir City, Kan.
Southwestern Coal Co.....	“	Cornell, Kan.
Fuller C. & M. Co.....	“	Fuller, Kan.

Term of lease, five years. These leases commenced December 1, 1896.

This company does not state the amount of money paid for the privilege of the five years' lease.

Yours truly, S. W. KNIFFIN, *President*.

ACCIDENTS.

FATAL AND NON-FATAL.

At the J. H. Durkee Coal Company's shaft No. 1, Henry Combs, a miner, met with an accident from a fall of slate breaking his leg above ankle. It seems from information obtainable that Mr. Combs was very careless, and neglected to set timber in his room. Mike Keaton, a miner working in the same entry, was in Mr. Combs's room. Noticing the slate, he asked Mr. Combs if he was not afraid to work under it without setting props, Mr. Combs seemed to think it was all right, and as he came out under the edge of the slate it fell, striking and breaking his leg above the ankle. Mr. Combs was fifty-four years of age. While he received good care, his limb healed slowly, and the result was that some weeks later, from confinement and other sickness, he died.

At the Hamilton & Braidwood Coal Company's mine No. 1, Wm. Spence, a miner, had his leg broken by a fall of coal. This accident occurred in Bennett Brown's time, and as he did not give me the details I could not state just how it happened.

At the Kansas & Texas Coal Company's mine No. 18, Wm. H. Barrett, lessee, Joseph Goodman, aged 26, met with a fatal accident while in an epileptic fit. At the time of the accident the Inspector was in the other end of the state visiting mines, and upon being notified of the accident started at once, and arrived at the mine on Wednesday at noon, October 20, 1897, and at once went to the place where Joseph Goodman worked, which was the sixth room back from face of eighth east entry off main north entry, accompanied by the driver, Dan Adamson, the man who found Joseph Goodman dead in the room. Mr. Adamson went into the room to see why Mr. Goodman did not push his car out, and he stated that he never had anything to shock him as that did, for he had been calling him for not pushing the car out, and after going in and finding him dead it made him feel bad. Distance room driven up from entry, 106 feet; there are four break-throughs in the room. While the room was clear the air was very light. This miner was subject to epileptic fits, and all indications showed that he met his death while in one of those fits by falling on his face in a small pool of water about three inches deep, and is supposed to have drowned or smothered. The Inspector was personally acquainted with Mr. Goodman, and knew him to be a quiet

and industrious miner; also knew he was subject to those fits. Mr. Goodman should not have been allowed to work in any part of the mine alone. If he had been working with a partner or some one else, it is the opinion of the Inspector that he would not have lost his life as he did.

At the Kansas & Texas Coal Company's mine No. 23, on May 14, Joe Comiskey, a miner, 19 years of age, was badly crushed by falling slate. It was reported his injuries were painful but not serious, and that he was recovering.

At the Wear Coal Company's mine No. 2, Henry Cression, a miner, aged 24, met with a fatal accident while shot-firing. Henry Cression was a Frenchman, two years in this country, and was mining coal and shot-firing at the time he was killed. He leaves a wife and two children. Upon being notified of the accident, Inspector started at once for the mine, though he was in Leavenworth at the time, and made a careful examination of the room and place where Cression was found dead, accompanied by John Williams, the other shot-firer, George Bacon, Daniel Miller, and John Kirkwood. The place where Henry Cression was found smothered was upon first south entry off fourth south back entry off main west. Mr. Cression was found by John Williams, the other shot-firer, in the third room back from face of slant entry; distance room was driven up from entry was 131 feet; from face of room to last break-through it was 35 feet. Mr. Williams stated to the Inspector that in his judgment Mr. Cression had been in the room about two hours, basing his judgment upon the amount of work that had been done, and that when he found him his lamp was still burning, though almost out for want of oil; upon examination, no marks were found on the body of Mr. Cression to show that he had been shot. Mr. Geo. Bacon stated to the Inspector that he helped to wash Mr. Cression, and that he did not see any marks upon the body. The miner who worked in this room had prepared two shots for the shot-firer to fire; one was tamped, and the other was a little damp and he left it for the shot-firer to tamp. This shot was drilled straight in the face to a horseback. The drill hole was seven feet four inches deep, and was all of five feet on the solid; no chance for the shot to throw out the coal. Indications showed plainly that the shot-firer squibbed both shots and lit them; back shot missed fire, and this shot that was straight in the face went off, and the powder wasted itself on a slip a couple of feet from the drill hole and did not as much as break the tamping in the needle hole. Shot-firer Henry Cression must have rushed right back to fire the missed shot, not being able to tell which shot went off, and, while examining and looking, inhaled and was overcome by the gases of the

burned powder, and fell down and smothered. As proof that he had gone back, the squib was in needle hole of back shot ready for lighting. Also, the Inspector was informed by Mr. Williams, the other shot-firer, that Mr. Cression always made it his plan, where any shots missed, to run right back into the smoke and try to fire the missed shot, and that he came very near being killed three times before by going back too quick, shots going off while he was going into the room or working-place to look for them. Mr. John Kirkwood, mine boss, stated to the Inspector that upon learning that Mr. Cression was taking such risks while at work he (Mr. Kirkwood) told him that he was taking too much risk, and he would have to put another man in his place. Mr. Cression begged Mr. Kirkwood to let him go on, as he would not take the same risks again, as he was poor and wanted to make a little money. After some discussion of the matter, Mr. Kirkwood consented to try him again, with the above results.

At mine No. 6 belonging to the same company, Thos. Phillips, aged 45, of Pittsburg, a miner, had his leg broken from a fall of slate at face of his room, while mining down a piece of coal; when coal fell, over slate came with it, striking him on the leg and breaking it.

At the Western Coal and Mining Company's mine No. 2, Louis Vingro, a shot-firer, met with a fatal accident, between the hours of six and nine o'clock on July 3, 1897. When found he was still alive, but died a few minutes after he was taken on top. Inspector visited the scene of the accident on Monday morning, to learn the cause as far as possible. Upon arriving at the mine the Inspector made an examination of the working-place, accompanied by Mr. James Gardner, mine boss of No. 7, Mr. Philip Raser, mine boss at No. 2, and Mr. W. M. Foster, the shot-firer who was at work in the mine when Louis Vingro was killed. Mr. Foster was the man who first found his buttly shot-firer, and he assisted the Inspector in every way to ascertain how Mr. Vingro met with the accident. The following are the facts as found by the Inspector, after a careful investigation of the same: The room in which he was killed is the fifth room off of fourth east entry off seventh south entry off of the main west. Upon examination of room and place, I find face of room 25 feet from last cross-cut; there were three shots prepared for the shot-firer to fire; two of these shots were at the face of the room, and one 28 feet from face of room where he was making a break-through upon left side of room. Everything showed plainly that Mr. Vingro prepared and squibbed ready for firing, and that he had lit the two shots at face of room. One of these shots went off just as soon as he lit the squib, and the whole of the shot was blown out and scattered along the right rib of the room for at least 20 feet, knocking out the squibs that had been lit in the face of the

room, as they showed that they had been lit and the fire knocked off of them. Indications showed plainly that this shot that went off killed Louis Vingro. The flesh was forced up his right arm to the shoulder; his arm broken in three places; his jaw-bone broken upon the right side of his face, a hole in the right side of his neck, and a hole in the right side of his head, and the whole of the right side of his body scratched with small pieces of coal and scorched with the fire from the shot, showing plainly that the shot went off just as soon as he lit it, and before he had time to get away from it; force of the shot blowed the body 16 feet away from where the shot was fired. The outside shot had four squibs in ready for firing, but had never been lit. When Mr. Foster found him he was still alive and sensible but unable to speak, as stated to the Inspector. Mr. Foster asked him how it happened, and he tried to speak but could not state one word. He was placed in a mine-car and taken out of the mine, and died soon after he was on top in engine-room. Upon examination, a little gas was found in needle hole of shot at face; also a little gas was found at back of drill hole of shot that had been fired, showing plainly that this shot in drill hole contained gas before it was fired. Indications showed that in squibbing this hole a little powder fell from the end of the squibs at the out end of the needle hole, and that he lit the inside shot at face of room first, and when he put his lamp to the needle hole to light the squibs in the second shot at face he must have lit the gas in the end of needle hole, and the small particles of spilled powder flashed the exposed end of the squib in the needle hole, and at that very moment, without any chance to get away, the squibs fired the shot. This may not have been the case, but all indications showed that it was, for he had received the force of the shot all on one side, and that was his right side, as though he had just put his lamp to the squibs to light them, and that he had never got outside to light the outside shot which had been already squibbed; and in addition, Mr. Louis Vingro was one of the most practical shot-firers in the state, and had been firing for this company for the last six years; but as this was Saturday evening, and the Fourth of July was going to be celebrated that evening, he was in a hurry to get through with his work, and had overlooked and did not examine the needle hole to see whether there was gas in it or not before squibbing, and in his hurry squibbed and then started to light, with the above results. The Inspector was satisfied that this man had fired hundreds of similar shots, and, had he noticed that the needle hole contained gas, would have lit his gas squibs and then placed them in the needle hole; and as these squibs do not blaze they would not have ignited the gas which is supposed to be the cause of the shot going off so quick.

At mine No. 2 belonging to the same company, Fred E. Pyle, driver, met with an accident upon August 7, by a loaded mine-car passing over him, dislocating right hip and lacerating his right leg, exposing the knee cap.

At mine No. 2 belonging to the same company, Joe Bell, aged 23, a miner, met with a serious accident by a fall of slate, which broke his back, and it is generally supposed that he will be a cripple for life from the results.

At mine No. 5 belonging to the same company, at Yale, Charles Larson, aged 33, met with a fatal accident by a fall of slate, on Friday morning, May 7. The Inspector at once started from Topeka for Yale, and got there on Monday morning. Mr. Roberts, mine boss, had gone to Osage City with the man who had been killed, his body being shipped there for burial. I visited the working-place, accompanied by Robert Penman, and after a careful examination of the same I found the following: Charles Larson worked in fourth south off main west entry. Larson belonged at No. 4 shaft of same company, and on this day was working in his butt's place. This man had gone to Kansas City on a visit. In working off a shot of coal that had been fired upon the straight rib of the entry, which relieved a rock from a slip that ran across the entry upon an angle of about 45 degrees, this rock had been loosened by last brushing shot, which was within four yards of face. Mr. Larson went to work without noticing this loose rock, and as he mined the coal down he was relieving and loosening the rock, and when the last of the coal was mined down the rock fell upon him, killing him instantly. The rock was 20 inches thick in the middle, $5\frac{1}{2}$ feet wide on north end, and $2\frac{1}{2}$ feet wide on the south end. It would probably weigh three tons, and sloped favorably to fall from the slip, and had he noticed it he would have propped it or pulled it down.

At mine No. 7 belonging to the same company, A. McCormick, aged 29, met with a slight accident by a fall of slate, but was not considered serious.

C. Wilson, aged 19, driver, working in the same mine, while driving met with a slight injury by a car passing over his foot, but was not considered very serious.

Geo. Douglas, aged 21, a miner, at work in the same mine, met with an accident while mining from falling coal, but was not considered serious.

At the A. Bell Coal Company's mine No. 1, at Coalvale, J. McLean, aged 50, miner, met with an accident by falling coal, while mining, which was not considered serious.

Also, Harry Jones, aged 46, miner, working for the same company,

received a light accident by falling coal, while mining, but was not considered serious.

At the Mt. Carmel Coal Company's Osage City mine No. 10, Ed. Hulsuple, a driver, met with an accident by car jumping track, but was not considered very serious.

At mine No. 23 belonging to the same company, Eusebo Pollo, miner, met with a slight accident by a fall of slate.

At mine No. 22 belonging to the same company, L. B. Cole, blacksmith, met with an accident while shoeing a horse. Horse kicked him and broke his leg.

At mine No. 24 belonging to the same company, James Brown, a day man, met with an accident. He fell down the shaft, but from some unknown reason was not seriously hurt. The mine was being worked double shift, cleaning up the shaft. Brown was top man on the night shift, and about five o'clock in the morning he pulled off a car of dirt, and from the time he left the cage to empty the car of dirt and returned the horse had pulled the cage about four feet above the landing, and as Brown came running back with the empty car he ran headlong into the shaft, falling a distance of about forty feet, receiving a few slight bruises and his left arm sprained.

At Miller Bros. Coal Company's mine No. 1, of Mulberry, Joe Peace, miner, met with a fatal accident, by being struck on the head by a piece of timber falling down shaft. This accident occurred in a new mine, located on the K. C. F. S. & M. railroad about two miles north of Mulberry. Joseph Peace was an old and careful miner. At the time of the accident the Inspector was in Leavenworth. The accident was not thought to be fatal, but Mr. Peace died in about two days after being hurt. The cause of the accident was as follows: Mr. Miller, owner of the mine, with Mike Smith, mine boss, and Joseph Peace, were on the bottom discussing some work in connection with the shaft. Top man was letting down the tub, and in drawing back the truck the dump block was loose, and had not been noticed, and it fell into the shaft. The top man hallooed, "Look out, below!" All on the bottom thought it was the tub coming back, as that was the usual signal given when sending down the tub. All stepped to one side; the block struck upon a bunting and glanced to one side, and struck Joseph Peace upon the head, crushing his skull. Mr. Peace was unconscious from the time he was hurt until he died. The depth of the shaft is 76 feet. The top man stated that before he had time to think the accident was done. Everything for the usual safety upon the top of the new shaft was provided for. The dump block that fell was supposed to be nailed, but from constant use had become loose, and was not noticed by any of the workmen. Had the top man had

the presence of mind to have halloosed "Look out for falling timbers!" the accident might not have occurred, as the men could have passed under where coal had been taken out; but they were not expecting falling timber and thought it was the tub.

At the Leavenworth Coal Company's mine No. 1, of Leavenworth, Thos. Mohan, miner, met with a fatal accident by a fall of slate at face of room in front of roadway. Room located off seventh east entry off first south entry off main west entry—room No. 3. At the time of the accident he was working with his brother, Wm. Mohan. He had worked for this company for the last 16 years, and was considered one of the best workmen and one of the most practical miners in the employ of the company. He was sober and industrious, but dull of hearing at times. The Inspector visited the place of accident, accompanied by Mr. Carr, and Mr. Grant Parker, mine boss of that division of the mine, and talked with the miners who helped to take Mr. Mohan out from under the slate; also gathered all the information available from the miners in connection with the place or room before the slate fell and killed Mr. Mohan. Miners at work in the next room stated to the Inspector that the room had been working and was dangerous all day; also, the miners stated that they had been working for the last two weeks very steady and hard, and they had taken up more of the bottom than was customary in that part of the mine, and in so doing their timbers were short for use in that place. Inspector asked the mine boss if at any time in the last few days Wm. or Thos. Mohan had asked him for longer timbers or asked any of his drivers or other parties authorized to furnish timbers, or for any change of timber other than the usual timber used in that part of mine. Mr. Grant Parker, mine boss, stated, in answer to the Inspector's questions, that neither Wm. nor Thos. Mohan had asked for any different timbers, nor ever made known to him that the room was dangerous. The coroner's jury brought in a verdict that Thos. Mohan met his death from the lack of having timber of sufficient length to properly timber and make his room secure; but from the general face of the testimony as learned by the Inspector, Mr. Thos. Mohan and his brother were overanxious to obtain coal, and by taking up heavy bottom it was easier mined, and they had allowed their place to become heavy before they properly timbered it; but, as stated by all of the witnesses, the room was well timbered at the time of accident.

At penitentiary mine, known as the state mine, located at Lansing, a non-fatal accident occurred upon September 15 to a cage load of men, while being lowered into the mine by engineer John Flint. As the cage was nearing the bottom of the shaft, by mistake he pulled

the reverse lever around, and before he could change the same the cage struck the bottom of the shaft, injuring the convicts upon the cage. This is a first-motion engine, and a very large drum is used. Usually, as a cage is nearing the bottom, the engineer works the steam against his engine so as to land lightly on top and bottom. He must have got control of his engine just before the cage struck the bottom, or the convicts would have all been killed. Mr. Flint, the engineer, has been hoisting for over six years at the penitentiary mine and at Brighton, near by, and has always been considered exceptionally cool and safe. He has hoisted under wardens Case, Chase, Lynch, and Landis, and never met with an accident of this kind before. Just as soon as the accident occurred, to show the coolness of Mr. Flint and his presence of mind, he walked over to the other engine-room, took hold of that engine, and lowered Mr. John Gray, superintendent, into the mine, that he might learn how badly the men were hurt that went down on the cage at the other shaft. It was made very plain to the Inspector, from all sources, that Mr. Flint's mistake was of the hand and not of the head, and was purely an accident. The men who were injured were all taken out at once and taken to the hospital and a convict nurse detailed to each one of them, and the doctor at once attended to all their sprains and bruises, and they received the very best of care until they were well.

TABLE OF FATAL AND NON-FATAL ACCIDENTS DURING THE
YEAR 1897.

1. December 13. J. H. Durkee Coal Company, Cherokee county, mine No. 1 (new). HENRY COMBS, age 54, resided at Weir City; married; miner; employed at mining; cause of accident, fall of slate; broke leg above ankle.
2. Hamilton & Braidwood Coal Company, Cherokee county, mine No. 1. WM. SPENCE, age 50, resided in Missouri; married; miner; employed at mining; cause of accident, fall of coal; leg broke. Time lost, 40 days.
3. October 18; died same date. K. & T. Coal Company (W. H. Barrett, lessee), Cherokee county, mine No. 18. JOS. GOODMAN, age 26, resided at Weir City; single; miner; employed at mining; cause of accident, epileptic fit.
4. May 14. K. & T. Coal Company (W. H. Barrett, lessee), Cherokee county, mine No. 23. JOE COMISKEY, age 19, resided at Weir City; single; miner; employed at mining; cause of accident, fall of slate.
5. July 23; died same date. Wear Coal Company, Crawford county, mine No. 2. HENRY CRESSON, age 24, resided at Kirkwood; married; miner; employed at shot-firing; cause of accident, suffocation.
6. September 28. Wear Coal Company, Crawford county, mine No. 6. THOS. PHILLIPS, age 45, resided at Pittsburg; married; miner; employed at mining; cause of accident, fall of rock.
7. Wear Coal Company, Crawford county, mine No. 5. WM. STANLIC, age 28, resided at Pittsburg; driver; employed at driving; cause of accident, fell off trip. Time lost, 35 days.

8. Mt. Carmel Coal Company, Crawford county, mine No. 5. JOHN MAFFEE, resided at Chicopee; single; miner; employed at mining; cause of accident, burned with powder. Time lost, 20 days.
9. Mt. Carmel Coal Company, Crawford county, mine No. 5. PAUL LEVER, resided at Chicopee; single; miner; employed at mining; cause of accident, burned with powder. Time lost, 20 days.
10. Mt. Carmel Coal Company, Crawford county, mine No. 5. JAMES FARRELL, resided at Chicopee; married; shot-firer; employed at shot-firing; cause of accident, burned while lighting shots. Time lost, 25 days.
11. July 3; died same day. Western Coal and Mining Company, Crawford county, mine No. 2. LOUIS VINGRO, age 32, resided at Fleming; single; shot-firer; employed at shot-firing; cause of accident, premature explosion.
12. Western Coal and Mining Company, Crawford county, mine No. 2. FRED PYLE, age 22, resided at Fleming; single; cause of accident, loaded car. Time lost, 75 days.
13. Western Coal and Mining Company, Crawford county, mine No. 2. JOS. BELL, age 23, resided at Fleming; single; miner; employed at mining; cause of accident, fall of slate broke his back.
14. May 7; died same day. Western Coal and Mining Company, Crawford county, mine No. 5. CHAS. LARSON, age 33, resided at Yale; single; miner; employed at mining; cause of accident, fall of slate.
15. Western Coal and Mining Company, Crawford county, mine No. 7. A. McCORMICK, age 29, resided at Yale; married; miner; employed at mining; cause of accident, fall of slate. Time lost, 60 days.
16. Western Coal and Mining Company, Crawford county, mine No. 7. C. WILSON, age 19, resided at Yale; single; driver; employed at driving; cause of accident, car caught foot. Time lost, 15 days.
17. Western Coal and Mining Company, Crawford county, mine No. 7. GEO. DOUGLAS, age 21, resided at Yale; single; miner; employed at mining; cause of accident, falling coal. Time lost, 30 days.
18. A. Bell Coal Company, Crawford county, mine No. 1. J. McLEAN, age 50, resided at Coalvale; married; miner; employed at mining; cause of accident, falling coal. Time lost, 12 days.
19. A. Bell Coal Company, Crawford county, mine No. 1. HARRY JONES, age 46, resided at Coalvale; single; miner; employed at mining; cause of accident, falling coal. Time lost, 12 days.
20. February 3. Mt. Carmel Coal Company, Osage county, mine No. 10. ED. HULSUPLE, resided at Osage City; single; mule driver; employed at driving; cause of accident, car jumped track. Time lost, 12 days.
21. February 18. Mt. Carmel Coal Company, Osage county, mine No. 23. EUSEBO POLLO, resided at Osage City; miner; employed at mining; cause of accident, fall of slate. Time lost, 50 days.
22. July 7. Mt. Carmel Coal Company, Osage county, mine No. 22. L. B. COLE, resided at Osage City; blacksmith; employed at shoeing horse; broken leg. Time lost, 50 days.
23. November 6. Mt. Carmel Coal Company, Osage county, mine No. 24. JAS. BROWN, resided at Osage City; top man; employed as dumper; cause of accident, fell down shaft. Time lost, 40 days.
24. October 20; died October 22. Miller Bros. Coal Company, Crawford county, mine No. 1. JOS. PEACE, age 50, lived at Mulberry; married; miner; employed at mining; cause of accident, hit on head by falling timber.

25. April 21. Central Coal and Coke Company, Crawford county, mine No. 9. ED. SONER, resided at Nelson; miner; employed at mining; cause of accident, fall of slate. Time lost, 60 days.
26. September 28. Leavenworth Coal Company, Leavenworth county, mine No. 1. THOS. MOHAN, age 30, resided at Leavenworth; single; miner; employed at mining; killed by fall of slate.
27. Chappell Coal Company, Osage county, mine No. 3.
28. Burlingame Coal-Mining Company, Osage county, mine No. 1.
29. Labor Exchange, Branch 223, Osage county, mine No. 1. SERAPHIN REYNAUD, age 27, resided at Osage City; single; miner; employed at mining; cause of accident, fall of slate. Time lost, 36 days.
30. Home-Riverside Coal-Mining Company, Leavenworth county, mine No. 2. "Colored," resided at Leavenworth; miner; employed at mining; cause of accident, burnt.
31. September 15. Penitentiary mine, Leavenworth county, mine No. 1. F. M. CLOUD, age 24, resided at penitentiary; convict; employed at mining; accident happened while descending into shaft.
32. September 15. Penitentiary mine, Leavenworth county, mine No. 1. E. W. BURGE, age 27, resided at penitentiary; convict; employed at mining; accident happened while descending into shaft.
33. September 15. Penitentiary mine, Leavenworth county, mine No. 1. LEWIS WORTHEN, age 19, resided at penitentiary; convict; employed at mining; accident happened while descending into shaft.
34. September 15. Penitentiary mine, Leavenworth county, mine No. 1. BERT PALMER, age 23, resided at penitentiary; convict; employed at mining; accident happened while descending into shaft.
35. September 15. Penitentiary mine, Leavenworth county, mine No. 1. GEO. WHITE, age 21, resided at penitentiary; convict; employed at mining; accident happened while descending into shaft.
36. September 15. Penitentiary mine, Leavenworth county, mine No. 1. ANDREW LACROSSE, age 18, resided at penitentiary; convict; employed at mining; accident happened while descending into shaft.

The casualties during the year 1897 were: Killed, 7; injured, 29.

TABLE OF FATAL AND NON-FATAL ACCIDENTS, AND COAL PRODUCTION FROM 1880 TO DECEMBER 31, 1897.

Office No.....	Year ending.	Casualties.		Number of annual report.....	Name of Mine Inspector.	Total tons produced (short tons).	Total value of coal.	Average price per ton.	Average number of days worked.	Average number of men employed.	Number of tons produced for each fatal and non-fatal accident.		Total number of casualties.....
		Killed.....	Injured.....								Killed.	Injured.	
1	1880 ¹.....	.....	.....	.....	.....	550,000	\$715,000 00	\$1 30	.....	.....	.....	.....	.....
2	1881 ¹.....	.....	.....	.....	.....	750,000	1,012,300 00	1 35	.....	.....	.....	.....	.....
3	1882 ¹.....	.....	.....	.....	.....	750,000	975,000 00	1 30	.....	.....	.....	.....	.....
4	1883 ¹.....	.....	.....	.....	.....	900,000	1,152,000 00	1 28	.....	.....	.....	.....	.....
5	1884 ¹	3	7	1st.....	E. A. Scammon.....	1,100,000	1,375,000 00	1 25	.....	.....	366,666	157,142	10
6	1885 ²	9	20	2d.....	John R. Braidwood.....	1,440,057	1,770,270 00	1 23	.....	.....	160,008	72,002	29
7	1886 ².....	.....	.....	.....	.....	1,350,000	1,620,000 00	1 20	.....	.....	.....	.....	.....
8	1887 ²	7	22	3d.....	G. W. Findley.....	1,570,079	2,198,110 00	1 40	.....	.....	224,297	71,367	29
9	1888 ².....	.....	.....	.....	John T. Stewart.....	1,700,000	2,550,000 00	.....	.....	.....	.....	.....	.....
10	1889 ²	12	4	4th.....	John T. Stewart.....	2,112,166	3,126,005 00	1 48	.....	5,956	176,013	528,041	16
11	1890 ²	8	20	.....	.....	2,516,054	3,170,870 00	1 30	2 10	4,523	314,506	125,802	28
12	1891.....	13	35	5th.....	.....	2,753,722	3,607,375 00	1 31	2 22	6,201	211,824	78,678	48
13	1892 ³.....	.....	.....	.....	.....	3,007,276	3,954,568 00	1 31½	2 08	6,559	.....	.....	.....
14	1893.....	15	61	6th.....	A. C. Gallagher.....	2,881,931	3,960,331 00	1 37½	1 47	9,891	192,128	47,244½	76
15	1894.....	26	53	7th.....	A. C. Gallagher.....	3,611,214	4,899,774 00	1 35%	1 64	10,088	138,883	68,136	79
16	1895.....	10	42	8th.....	Bennett Brown.....	3,190,843	3,590,141 00	1 12½	1 61	9,021	319,084	75,973	52
17	1896.....	12	25	9th.....	.....	3,191,748	3,227,357 00	1 01½	1 70	8,807	265,979	127,669	37
18	1897.....	6	30	10th.....	Geo. T. McGrath.....	3,296,806	3,527,582 42	1 07	1 52½	8,699	549,467%	109,893½	36
Totals.....		.....	.....	.....	.....	36,671,896	\$46,431,633 42	.....	.....	.....	.....	.....	.....

1. Production of coal and average price per ton made from U. S. geological survey, from 1880 to 1884.

2. One report made for two years.

3. No report made. Statistics for that year taken from U. S. geological survey.

* Explosion at mine No. 2 at Frontenac. No record made of loss of life, but forty-four lives were lost.

The average number of days worked for 1897 is taken from the four largest coal-producing counties in the state. The reason for this low average may be attributed to mines that load nothing but commercial coal, reducing the number of days worked by mines that load railroad coal.

STRIKES.

During the month of July, 1897, the miners of Cherokee and Crawford counties were very seriously discussing the advisability of suspending work and coming out upon a sympathetic strike, for the purpose of helping their fellow working men who were at that time on a strike in the East and struggling for better wages. Every one admitted that the struggle in the East was a just one, for they had been reduced from time to time until they were working for starvation wages. The result was, the calling of two or three delegate meetings of the miners of Cherokee and Crawford counties, for the purpose of discussing this matter, and finding out how the miners of both counties felt; after a great deal of discussion, and two delegate meetings, they came to the conclusion that they had grievances of their own, and this was the time to bring them before the operators, and right them if it was possible to do so, as the operators were getting a good price for their coal, and the miners felt that they ought to be paid more; also, they wanted a reduction of 50 cents per keg on powder, and semi-monthly pay; also pay for moving dirt, and a uniform wage for underground day men, and that was to be \$2 per day, and some other local matters which they felt ought to be settled. The result was, the delegate convention elected an executive board, and instructed them to notify the coal companies of Cherokee and Crawford counties of their grievances, and ask the operators to meet with them and see what could be done to make matters satisfactory to the miners before any hasty action was taken; and the result was, as the operators had had all the strike they wanted a few years ago, and many of them had not got over it yet, this was *vice versa* with the miners. So a meeting of the operators and executive board was finally arranged for August 6, 1897, at Pittsburg. This meeting resulted in an adjournment to August 14, 1897, when the operators and executive board met again. After a lengthy discussion *pro* and *con*, an agreement and contract were reached which the Inspector believes proved beneficial to both operators and miners. The following is a copy of the minutes of each meeting and the contract:

PITTSBURG, KAN., August 6, 1897.

A meeting of the executive board of the miners of Crawford and Cherokee counties and the mine operators in this district was called to order in city hall by chairman of the executive board, Geo. Wallace, at two o'clock P. M. Geo. Wallace was elected chairman, and A. B. Kirkwood secretary.

The following companies and operators were represented by the following parties at said meeting: The Mt. Carmel Coal Company, by C. J. Devlin, Henry Wilson, and Robert Fletcher; the Central Coal and Coke Company, by David Mackey; the Western Coal and Mining Company, by A. K. Craig; the Wear Coal Company, by A. B. Kirkwood; the Durkee Coal Company, by J. H. Durkee; the Pittsburg & Midway Coal Company, by Jno. T. Morrison and S. H. Lanyon; the Weir Brothers Coal Company, by A. J. Weir; the Graham Coal Company, by James Graham; the Weir City Coal Company, by Joseph Bennett; the Hamilton & Braidwood Coal Company, by Wm. Hamilton, sr.

The following companies were not represented at the meeting: The South-western Coal and Improvement Company, Arnott & Lanyon, the Scammon Coal Company, the Schwab Coal Company, the Kansas Commercial Coal Company (Fuller mine), the Kansas & Texas Coal Company.

The miners of the two counties were represented by the following executive board: Geo. Wallace, as chairman, Alexander Vanderbeck, W. H. Tidey, John Manning, and Wm. Kelley.

Geo. Wallace, after being elected to the position of chairman of the meeting, proceeded to state the following grievances, in behalf of the miners of Crawford and Cherokee counties, and asked at the hands of the operators their consideration:

First.—Semi-monthly pay-days.

Second.—Reduction in price of powder to \$1.50 per keg, and change of grade in some instances.

Third.—Uniform price of \$2 per day for men underground; also uniform price for entry work and pay for gobbing dirt.

Fourth.—That all coal mined in the district shall be weighed and paid for on a mine-run basis at a rate of 60 cents per ton the year round.

After Mr. Wallace had stated the concessions asked for in behalf of the miners, the operators were invited to discuss the same. The various propositions were discussed in an informal manner in behalf of the operators by Mr. Hamilton, Mr. Mackey, and Mr. Devlin. It was the universal opinion of the operators represented at the meeting that no reduction on the price of powder could be made, but that each company felt willing to allow its miners the privilege of designating what brand or grade of powder they preferred using.

A motion was made by Mr. Devlin that Mr. Mackey, Mr. Hamilton and Mr. Craig be appointed a committee of three from the operators to meet an equal number of the executive board and figure out a settlement of the grievances under discussion, if possible; said motion, however, failed to receive a second, and was therefore not put to the meeting.

After an informal talk by Mr. Devlin, rehearsing the whole situation here, the operators agreed with the executive board that they would allow the miners to choose what grade and quality of powder they would use; the price to remain at \$2; also, agreed to pay the miners semi-monthly, and \$2 per day for all day work underground, and that the operators agree in the meantime to use their best endeavor to have a full representation of all the operators in the district at a meeting to be held at same place on Saturday, August 14, at two o'clock P. M., for the purpose of making a final settlement of the demands of the miners of 60 cents per ton on a mine-run basis. It was also asked on behalf of the operators that the executive board endeavor to be empowered by the miners to arrange with the operators for a final settlement at this meeting.

After some more informal discussion, the meeting adjourned until the Saturday above mentioned. It was also understood and agreed by the operators, that

if for any reason a full representation of their number was not present at the meeting to be held on the 14th, those who did attend would be empowered to make a final settlement of existing grievances.

GEO. WALLACE, *Chairman*.

A. B. KIRKWOOD, *Secretary*.

AUGUST 14, 1897.

The adjourned meeting of the executive board of the miners of Crawford and Cherokee counties and mine operators in this district was called to order at seven o'clock P. M. in the parlors of the Stilwell hotel.

The following companies were present and represented as follows: The Mt. Carmel Coal Company, by C. J. Devlin, Henry Wilson, and Joseph Fletcher; the Central Coal and Coke Company, by Geo. Mackey; the Western Coal and Mining Company, by A. K. Craig; the Southwestern Coal and Improvement Company, by Ira Flemming; the Pittsburg & Midway Coal Company, by Jno. T. Morrison and Henry Lanyon; the Wear Coal Company, by F. E. Wear and A. B. Kirkwood; the Graham Coal Company, by James Graham; the Hamilton & Braidwood Coal Company, by Jno. R. Braidwood.

The following companies were not present or represented: The Kansas & Texas Coal Company, the Kansas Commercial Coal Company, the Scammon Coal Company, the Weir City Coal Company, the Schwab Coal Company, the J. H. Durkee Coal Company, Arnott & Co., the Pittsburg Coal and Coke Company.

The miners were represented by the following executive board, said members working for the following companies: Geo. Wallace, chairman, working for the Central Coal and Coke Company; John Manning, the Western Coal and Mining Company; Thomas Flynn, the Mt. Carmel Coal Company; Alexander McKillop, the J. H. Durkee Coal Company; Alexander Vanderbeck, the Graham Coal Company; J. C. Fogle, the Scammon Coal Company.

Geo. Wallace, chairman of the executive board, called the meeting to order, A. B. Kirkwood, of the Wear Coal Company, acting as secretary.

After the meeting had been called to order, Mr. Devlin, of the Mt. Carmel Coal Company, proceeded to make a talk relating to Mr. Ryan of the United Mine Workers of Illinois trying to get the miners of this district to engage in a sympathy strike. He asserted that Mr. Ryan had been associated with Mr. Conners, of the miners' state board of Illinois, and that Mr. Conners has been in the pay of some of the large companies of that state, and drew the inference that Ryan was probably no better than Conners, and was here for the purpose of benefiting the operators of northern Illinois and Iowa, to the detriment of the interest of the miners of Crawford and Cherokee counties, should they engage in a sympathy strike. He also stated that Ryan had advised the miners of Illinois, on the first of June of this year, that they accept a reduction of twenty-four per cent. and wished that Ryan had only been present at this meeting, so he could have faced him with the assertion that he made.

Mr. Flynn, of the executive board, then made a talk along the lines of a settlement, and hoped that one could be reached at this meeting, stating that it was not the desire of the miners to precipitate a strike, and that the executive board is fully empowered to make a settlement.

Mr. Wear then stated that the Kansas & Texas Coal Company was not represented at the meeting, although they had been asked to be present, and he understood that they had not been represented in the delegate convention that had chosen the executive board, and that, in his opinion, further time should be

given, so as to compel the attendance of the Kansas & Texas Coal Company, and that their men should be forced to have a representation on said executive board; in reply to which, Mr. Flynn, of the executive board, said that no attention should be paid to the Kansas & Texas Coal Company; that they had not been in the habit of attending meetings of this character, and that any agreement that should be reached by the other companies the Kansas & Texas Coal Company would be compelled to coincide in.

Mr. Tidey, of the executive board, said that at a delegate convention the miners of Nos. 20 and 37 had agreed that they would be governed by the decision of the balance of the men, as represented by the executive board.

Mr. Flemming, of the Southwestern Coal and Improvement Company, then stated that his company was not represented and they had no representation on the executive board.

In reply to this, Mr. Manning stated that his company was represented by two or three delegates at the delegate convention at which the executive board was chosen. Mr. Manning also stated that the Kansas & Texas had a representative from mines 23 and 37 at the delegate convention at which the executive board was chosen.

Some remarks were then made by Mr. McKillop, of the executive board, concerning the condition of the miners in the two counties, and calling attention to last paragraph of the minutes of the previous meeting, in which it was agreed by the operators that they would be fully empowered to make a settlement at this meeting.

Some discussion was entered into by Mr. Manning, of the executive board, and Mr. Braidwood, of the operators, as to the number of tons of coal that could be produced per keg of powder.

After much desultory discussion, the question was propounded by the executive board to the operators, if they were prepared to settle the matter; in reply to which Mr. Braidwood, of the operators, claimed that only one side of the question had been presented to the miners, and asked for further time, in order that he might place the situation from an operator's standpoint before his men, and suggested that a new delegate convention be called, based on a representation of one delegate for every fifty miners employed; said delegation to include, in addition, said executive board.

This argument was met by Mr. Wallace, saying that the executive board was the result of the representation of the character asked for by Mr. Braidwood.

Some further talk was then made by Mr. Flemming, Mr. Braidwood, and Mr. Wear, that no formal complaint had been made by their men, and they were not aware of any grievances existing, and that they preferred settling a difficulty with their own men.

It was then moved by Mr. Braidwood that the question of settlement be deferred for one week, and that the miners of each company elect a delegate for each fifty men employed, and that they meet with the present executive board, together with as full a representation of the operators as could be secured, on next Saturday, for the purpose of settling existing demands; this motion to be voted on by the operators only. Mr. Wallace, chairman of the meeting, refused to entertain the motion, claiming that the present board was fully empowered and authorized to make any settlement that might be determined on with the operators at this meeting.

Motion was then made by Mr. Braidwood that a price of 54 cents a ton for mine run be made the year round. This motion was also ruled out of order by the chairman, as it contemplated a reduction on September 1.

A motion was then made by Mr. Wear, as follows: That we pay 56 cents a ton for mine-run coal; 95 cents for screened lump over the standard seven-eighths screen. This motion was voted on by the operators, the executive board refusing to take part in the proceeding or entertain the motion, Mr. Wallace claiming that they could not entertain any such proposition.

An intermission of twenty-five minutes was then called, to allow the executive board and operators to confer separately.

After the conference and the meeting had again been called to order the chairman submitted the following proposition: That the miners would accept 54 cents a ton for mine-run coal and 90 cents for lump as a summer price, and 59 cents a ton for mine-run coal and \$1 for lump as a winter price. Said proposition was then discussed, with the result that a counter proposition was made by the operators, under the following motion:

Resolved, that the price of mining agreed on be as follows: Lump coal, winter, 97 cents per ton; lump coal, summer, $87\frac{1}{2}$ cents; mine-run coal, winter, 58 cents; mine-run coal, summer, 52 cents.

The above proposition was made by Mr. Wear and Mr. Devlin.

Motion by Mr. Fogle that a vote of both operators and executive board be taken on this proposition, and the same be made a part of the record.

Mr. Devlin, in behalf of the Mt. Carmel Coal Company, said that he would recommend the signing of a contract on the above basis. The Hamilton & Braidwood Coal Company, by Mr. Braidwood, that he would recommend the acceptance of the same; the Central Coal and Coke Company, the Western Coal and Mining Company, the Graham Coal Company, and the Pittsburg & Midway Coal Company would recommend the acceptance; the Wear Coal Company, that they would sign such a contract; Weir Brothers, that they would sign such a contract; and the executive board, that they would accept such a contract.

It was then moved that a meeting be called at seven o'clock the next evening for the purpose of drawing up a contract and signing the same on behalf of the miners and by the operators; after which the matter was taken up by Mr. McKillop, as to when the semi-monthly pay would go into effect; and it was agreed and understood this would go into effect in the month of September.

Meeting then adjourned until to-morrow evening at seven o'clock.

GEO. WALLACE, *Chairman*.

A. B. KIRKWOOD, *Secretary*.

PITTSBURG, KAN., August 14, 1897.

It is agreed by and between the executive board of the miners of Crawford and Cherokee counties and the operators subscribing hereto, as follows:

That the price of mining coal shall be, for the six winter months, commencing September 1, 1897, 97 cents per ton for screened lump coal over the standard seven-eighths screen; for mine-run coal, 58 cents per ton.

For the six summer months, the price shall be, screened lump $87\frac{1}{2}$ cents per ton; mine-run coal, 52 cents per ton.

That all day work below ground shall not be less than \$2 per day for men.

That all wages shall be paid twice each month.

That all dirt necessary to be handled by miners be paid for at 50 cents per yard or 10 cents per box, or be taken away by the company.

That each company furnish a satisfactory grade of powder.

That this contract shall be in effect for two years.

GEORGE WALLACE, *Chairman*.

J. C. FOGLE.

N. B. TEASDALE.

W. H. TIDEY.

JOHN MANNING.

THOMAS FLYNN.

ALEX. MCKILLOP.

EVAPORATIVE POWER OF KANSAS COALS.

The commercial value of coal is not a criterion of its actual heating power. The cost of mining, distance from market, competition, etc., determine the former, while the latter depends solely upon the coal *per se*. Further, the total amount of heat obtained by the complete combustion of a given amount of coal exceeds largely—often by fully 100 per cent.—the amount usually obtained in practice. Confining ourselves to coal used in the production of steam, this is due to imperfect combustion, to arrangement of grate and heating surface, methods of firing, etc. The same coal in different furnaces may give different results. Duty tests upon any one plant give the relative values of coals for that plant only. There is, however, an important method of comparing the actual heating values of coals which is independent of commercial values and of diversified conditions of burning. It is by measuring the heat given out by coals under perfect combustion, expressed in terms of their evaporative powers. To this end, therefore, it is quite customary to compare coals according to their evaporative powers. By this is meant, how many pounds or kilograms of water at 212° F. will be converted into steam, also at 212° and under 760 mm. pressure, by one pound or one kilogram of coal. The object of the present investigation is to compare coals from the different Kansas veins according to their evaporative powers as defined above.

Specimens were taken from localities as widely distributed as possible over the vein—north, south, east, and west—particularly north and south, as the veins dip west and north. The results may be considered as fair representatives of the whole vein, and also as embracing the principal veins at present worked in the state of Kansas. These results are presented in the table following. For comparison's sake, there are included also tests of the best Indiana block coal (Clay county).

TABLES.

About one-half the evaporative powers here given in first column will be obtained in steam-boilers. Best Indiana block gives 14.43 and 17.04 pounds evaporative power for 10 and 30 per cent. corrections, respectively.

A.—CHEROKEE COALS.

(Pittsburg, Weir City, Scammonville, Frontenac, Stillson, etc.)

Number of sample.	Pounds of water at 212° evaporated per pound of coal. (Correction on apparatus.)		Duration of burning, seconds.	Remarks.
	10 per cent.	30 per cent.		
1.....	13.53	15.97	40	Violent burning.
2.....	13.64	16.10	45	
3.....	13.01	15.35	45	
4.....	13.31	15.71	60	
5.....	13.31	15.71	60	
6.....	13.86	16.36	65	
7.....	13.53	15.97	50	
8.....	13.94	16.45	75	
9.....	13.42	15.84	90	
Averages.....	13.51	15.94		
All samples mixed.....	13.42	15.84	80	

B.—CHEROKEE COALS (upper vein),

(Pittsburg.)

1.....	12.43	14.67	55	
2.....	12.76	15.06	45	
3.....	13.31	15.71	60	
Averages.....	12.83	15.14	.....	
All samples mixed.....	12.57	14.80	60	

C.—FORT SCOTT COALS.

1.....	13.64	16.10	65	
2.....	13.09	15.45	60	
3.....	13.86	16.35	55	
Averages.....	13.53	15.97	.....	
All samples mixed.....	13.20	15.58	120	

D.—LEAVENWORTH COALS.

1.....	13.36	15.76	75	Brown residue.
2.....	12.25	14.46	80	
3.....	13.86	16.35	65	
Averages.....	12.95	15.52	.....	
All samples mixed.....	12.54	14.80	105	

E.—LINN COUNTY COALS.

(Pleasanton, La Cygne, etc.)

1.....	12.76	15.06	60	Brown residue.
2.....	12.76	15.06	70	
3.....	12.87	15.49	80	
4.....	12.54	14.80	75	
Averages.....	12.73	15.10	.....	
All samples mixed.....	12.76	15.06	100	

F.—OSAGE COUNTY COALS.

(Osage City, Scranton, Carbondale, Burlingame, etc.)

Number of sample.	Pounds of water at 212° evaporated per pound of coal. (Correction on apparatus.)		Duration of burning seconds.	Remarks.
	10 per cent.	30 per cent.		
1.	11.88	14.02	110	Brown residue.
2.	10.96	12.93	90	" "
3.	12.98	15.32	120	" "
4.	11.66	13.76	120	" "
5.	12.43	14.67	120	" "
6.	11.99	14.15	165	" "
7.	11.66	13.76	120	" "
8.	11.88	14.02	120	" "
9.	11.55	13.63	70	" "
10.	11.44	13.50	80	" "
11.	11.66	13.76	105	" "
Averages.	11.76	13.96		
All samples mixed.	12.10	14.28	135	

G.—FRANKLIN COUNTY COAL.

1.	12.32	14.54	125	
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H.—CLOUD COUNTY COAL.

1.	9.90	11.68	135	
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SUMMARY.

From these results, the Kansas coals thus far examined are to be arranged in the order following as regards their evaporative powers. About one-half the evaporative powers here given under the 10-per-cent. correction will be obtained in practice.

Name of coal.	Table.	Pounds water evaporated per pound of coal.		Duration of burning, seconds.	Calories gram, degrees centigrade.	
		10 per cent.	30 per cent.		Correction.	
					10 per cent.	30 per cent.
1. Cherokee.	A.	13.42	15.84	65	7206	8506
2. Fort Scott.	C.	13.20	15.58	60	7088	8364
3. Linn county.	E.	12.76	15.06	65	6852	8105
4. Cherokee, upper vein, Leavenworth.	B. } D. }	12.54	14.80	{ 50 } { 75 }	6734	7946
5. Franklin county.	G.	12.32	14.54	125	6615	7806
6. Osage county.	F.	12.10	14.28	115	6498	7668
7. Cloud county.	H.	9.90	11.68	135	5316	6273
For comparison: Best Indiana block (Clay county)		14.43	17.03	.....	7749	9144

The coals depreciated in their steam-producing powers from the southern part of the state toward the north and west. Professor Bailey finds they depreciate in the amount of fixed carbon in a similar order.

COMPOSITION OF KANSAS COALS.

Name.	Water.	Volatile.	Fixed carbon.	Ash.
Cherokee.....	1.94	36.77	52.45	8.84
Cherokee (upper vein).....	2.08	35.32	48.64	13.96
Fort Scott.....	2.94	41.76	47.55	7.75
Leavenworth county.....	2.69	39.21	47.41	10.69
Linn county.....	2.07	39.42	46.89	11.62
Osage county.....	6.76	41.59	40.86	10.79
Franklin county.....	7.55	44.40	37.68	10.37
Cloud county.....	13.70	46.14	28.52	11.64
Pittsburg, Pa.....	1.31	36.61	54.17	7.91
Nebraska.....	4.93	38.17	49.44	7.46
Warren county, Missouri.....	6.75	36.40	45.75	11.10

If the water and ash are eliminated in the calculation from the above results, as is suggested in a recent report of the Pennsylvania geological survey, the coals of Kansas will be divided into five groups. In the first group are included the Cherokee coals; in the second, Fort Scott, Leavenworth and Linn counties; in the third, Osage county; in the fourth, Franklin county; and in the fifth, Cloud county.

The coals found in the extreme southeast are richer in fixed carbon or coke, and this diminishes as we go toward the northwest. On the other hand, the volatile matter is more abundant compared with the fixed carbon in the upper or northern coals. There is uniformly more water in the Osage county coal and in those above it than in the lower coals. In regard to ash, Cherokee and Fort Scott contain the least; the others contain from 10 to 12 per cent.

ANALYSIS, SPECIFIC GRAVITY, ETC., OF KANSAS COALS.

NAME OF MINING COMPANY.	Location.	Per cent. of sulphur.	Specific gravity.	Weight of one cubic foot.
				(Pounds.)
Southwest. Coal and Imp. Co..	Mineral.....	1.007	1.338	83.625
James O'Neil.....	Cherokee.....	2.678	1.399	87.437
Land and Improvement Co.....	".....	1.460	1.284	80.250
Columbus Coal Co.....	Stepville.....	0.684	1.278	79.895
C. C. & Coke Co.....	Scammon.....	1.894	1.322	82.625
Graham Coal Co.....	".....	1.616	1.336	83.500
Stone & Dixon Coal Co.....	".....	1.288	1.343	83.937
Kansas & Texas, No. 18.....	Weir City.....	2.551	1.296	81.100
" " No. 47.....	".....	0.765	1.281	78.062
Weir Junction Coal Co.....	".....	1.056	1.299	81.187
Western Coal & Mining Co.....	Pittsburg.....	1.394	1.286	81.375
Hamilton & Braidwood Coal Co., No. 2.....	Weir City.....	1.244	1.344	84.000
C. C. & Coke Co., No. 5.....	".....	2.557	1.343	83.934
Durkee Coal Co., No. 1.....	".....	2.787	1.319	82.747
Excelsior Coal Co.....	".....	1.715	1.285	80.312
Mt. Carmel C. & M. Co., No. 5,	Chicopee.....	1.381	1.382	86.375
" " " No. 1,	Frontenac.....	2.329	1.337	83.562
Kansas & Texas, No. 20.....	Pittsburg.....	1.867	1.310	81.875
Strip coal.....	".....	1.513	1.017	63.562
Pittsburg & Midway C. & M. Co.	Midway.....	1.616	1.336	83.500
Sennatt Bros., No. 3.....	Cornell.....	1.560	1.321	82.565
Morganville Coal Co.....	Morganville.....	0.942	1.261	78.832
Bell Coal Co.....	Coalvale.....	2.376	1.276	79.750
Company unknown.....	Pleasanton.....	0.956	1.352	84.500
State mine.....	Lansing.....	1.197	1.319	82.637
Kansas Commercial Coal Co.....	Fuller.....	1.022	1.302	81.375
Anthracite, taken from seam next to "Bell".....	Leavenworth.....		1.400	87.500

This letter will explain the analysis table on page 133:

LAWRENCE, KAN., February 9, 1898.

Hon. G. T. McGrath, State Mine Inspector, Weir City, Kan.:

DEAR SIR—The analyses we have made of the Kansas coals here in our laboratory shows the following per cent. of sulphur. It should be understood, however, that this does not refer to the so-called "sulphur rock," which in all cases was excluded from the samples to be analyzed. The best estimate I can give you of the weight of a cubic foot of coal is about calculated from the specific gravity, which, while possibly not absolutely correct, is yet almost so. The difficulty in determining this exactly is that it is so hard to find a small sample for testing which is uniform with the volume. Hoping this will be satisfactory, I remain,

Yours very truly,

ERASMUS HAWORTH.

SUMMARY OF COAL MINED, AND MINERS' WAGES, FOR THE YEAR 1897.

Office No.....	Counties.	Gross number of tons mined in each county (short tons).	Employees.				Value of coal at mine (mine run).	Casualties.	
			Miners....	Boys.....	All others..	Total.....		Killed....	Injured...
1	Crawford.....	1,590,620 $\frac{3}{4}$	2,393	48	614	3,138	\$1,566,761 44	4	13
2	Cherokee.....	1,040,409	1,815	71	467	2,354	998,792 64	1	4
3	Osage	181,857	1,288	65	108	1,462	300,974 15 $\frac{3}{4}$	.....	7
4	Leavenworth	367,141	762	15	295	1,072	460,761 95 $\frac{1}{2}$	1	7
5	Brown.....	2,300	15	.....	.....	15	4,600 00	.....	.....
6	Chautauqua	1,200	27	.....	.....	27	3,000 00	.....	.....
7	Labette.....	2,000	30	.....	.....	30	6,000 00	.....	.....
8	Republic.....	1,300	12	.....	.....	12	2,925 00	.....	.....
9	Bourbon.....	28,483	100	.....	100	200	26,966 00	.....	.....
10	Lincoln	750	13	.....	8	21	2,250 00	.....	.....
11	Shawnee	804	15	.....	5	20	2,146 68	.....	.....
12	Franklin	6,452	48	3	8	59	12,097 50	.....	.....
13	Lyon	835	14	.....	5	19	1,878 75	.....	.....
14	Ellsworth	1,427	22	1	4	27	4,281 00	.....	.....
15	Elk.....	320	4	.....	1	5	800 00	.....	.....
16	Russell.....	181	9	1	2	12	543 00	.....	.....
17	Atchison	5,152	45	.....	4	49	12,880 00	.....	.....
18	Linn.....	26,775	81	.....	14	95	29,452 50	.....	.....
19	Cloud	2,800	22	2	3	27	6,300 00	.....	.....
20	Coffey.....	10,000	35	.....	20	55	22,500 00	.....	.....
	Totals.....	3,270,806	6,750	206	1,658	8,699	\$3,465,910 71	6	31

SUMMARY OF COAL MINED, AND WAGES, FOR THE YEAR 1897—CONTINUED.

Office No.....	COUNTIES.	Average price paid per ton for mining.		Number of days miners worked during year....	Number of kegs of powder used.	Value of powder (\$ per keg)....	Average paid day men under-ground.....	Average paid day men above ground.....	Estimated value of mines and fixtures outside of tenement houses.....	Tons of coal produced for each fatal accident..
		Lump.	Mine run.							
1	Crawford.....	\$0 92½	\$0 55	4,327	87,272	174,544	\$2 00	\$1 48	\$509,740	\$397,655
2	Cherokee.....	92½	55	3,910	65,894½	131,789	2 00	1 60	417,150	1,040,409
3	Osage	1 12½	.....	4,966	91	182	1 89	1 65½	68,230	.....
4	Leavenworth ..	.....	80	734	*3,000	600	2 00	1 75	280,000	183,570½
5	Brown.....	1 50	.....	160	.....	.....	.....	.....	300	.....
6	Chautauqua ...	2 00	.....	75	.....	.....	.....	.....	500	.....
7	Labette	2 00	.....	100	.....	.....	.....	.....	500	.....
8	Republic.....	1 50	.....	100	.....	.....	.....	.....	300	.....
9	Bourbon.....	1 25	.....	150	.....	.....	.....	.....	.....	.....
10	Lincoln	2 00	.....	395	.....	.....	1 75	1 50	2,000	.....
11	Shawnee	1 70	.....	357	2	4	1 75	1 50	900	.....
12	Franklin	1 25	.....	617	25	50	1 75	1 50	5,250	.....
13	Lyon.....	1 73½	.....	185	3	6	1 75	1 50	3,600	.....
14	Ellsworth.....	2 00	.....	331	2	4	1 75	1 50	1,840	.....
15	Elk.....	1 75	.....	60	1	2	1 75	1 50	1,200	.....
16	Russell.....	2 12½	.....	101	.....	.....	1 75	1 50	600	.....
17	Atchison	1 25	.....	410	13	.....	1 75	1 50	2,600	.....
18	Lynn.....	75	.....	445	18	36	1 75	1 50	30,500	.....
19	Cloud	1 30	.....	320	.....	.....	1 75	1 50	2,100	.....
20	Coffey.....	1 25	.....	250	2	4	1 75	1 50	3,000	.....
	Totals.....	.....	.....	17,993	156,323	307,221	.....	.....	\$1,330,310	.....

* Giant, pounds.

SUMMARY OF COAL MINED, AND MINERS' WAGES, FOR YEAR 1897—CONTINUED.

Office No.....	Counties.	Tons of coal produced for each non-fatal accident.....	Av. No. of days mine worked during the year.	Gross earnings per annum per miner.....	Total wages of all the miners in each county.	Net earnings of each miner after deducting mine expenses.....	Average wages for each day's work.....	Per cent. of mining expenses ...	Total mining expense of each miner for time worked.....
1	Crawford.....	122,355	140	\$365 58½	\$874,844 90	\$272 20	\$1 94½	25.55½	\$93 38
2	Cherokee.....	260,102	162	315 28	572,224 95	221 67	1 37	29.69½	93 61
3	Osage.....	25,979	124	158 84½	204,589 14	142 26	1 15	10	16 58
4	Leavenworth ...	52,448	183	424 50	241,808 80	401 45	2 19	5½	23 05
5	Brown.....		53	230 00	3,450 00				
6	Chautauqua.....		37½	88 89	2,400 03				
7	Labette.....		50	133 33	3,999 90				
8	Republic.....		100	162 50	1,950 00				
9	Bourbon.....		150	178 02	17,802 00				
10	Lincoln.....		98	115 38	1,499 94				
11	Shawnee.....		89	91 12	1,366 80	78 87	88¾	10½	12 25
12	Franklin.....		102	168 02	8,064 96	154 98	1 52	8	13 04
13	Lyon.....		62	103 18	1,444 52	90 78	1 46½	12	12 40
14	Ellsworth.....		110	129 72	2,853 84	137 52	1 25	10	12 20
15	Elk.....		60	140 00	560 00	127 50	2 12½	9	12 50
16	Russell.....		50	47 76	429 87	43 76	87½	8½	4 00
17	Atchison.....		205	143 11	6,439 95				
18	Linn.....		148	147 91	20,080 71	235 46	1 59	5½	12 45
19	Cloud.....		106	165 45	3,639 90				
20	Coffey.....		125	227 27	7,954 45	215 15	1 72	5½	12 12
	Totals.....				\$1,977,413 66				

SUMMARY OF COAL MINED, AND MINERS' WAGES, FOR YEAR 1897—CONCLUDED.

Office No.....	Counties.	Average wages per day per year for each miner in the county...	Total wages earned by day men underground.....	Net earnings of each day man underground per year.....	Total amount of wages earned by day men above ground..	Net earnings of each day man above ground...	Average wages per year for day men underground.....	Average wages per year for day men above ground.....
1	Crawford.....	\$0 87.80	\$87,640 00	\$280 00	\$62,367 20	\$207 20	\$0 90.32	\$0 66.90
2	Cherokee.....	71.19	82,944 00	324 00	54,691 20	259 20	1 04.52	83.61
3	Osage.....	45.80	16,639 56	234 36	7,798 36	205 22	75.60	66.20
4	Leavenworth...	1 29.50	30,520 00	436 00	15,641 50	381 50	14.06	1 23 06
5	Brown.....							
6	Chautauqua...							
7	Labette.....							
8	Republic.....							
9	Bourbon.....							
10	Lincoln.....		686 00	171 50	588 00	147 00	55.32	47.41
11	Shawnee.....	25.50	311 50	155 75	400 50	133 50	52.41	43.06
12	Franklin.....	49.98	1,071 00	178 50	306 00	153 00	57.58	49.35
13	Lyon.....	29 20	325 50	108 50	93 00	46 50	35	15
14	Ellsworth.....	44 30	325 50	108 50	93 00	46 50	35	15
15	Elk.....	41.10	105 00	105 00			33.87	
16	Russell.....	14.20	87 50	43 75	75 00	75 00	14.11	24.19
17	Atchison.....		1,076 25	358 75	307 50	307 50	11.57	99.19
18	Linn.....	75.90	2,072 00	259 00	1,332 00	222 00	83.54	71.61
19	Cloud.....		556 50	185 50	318 00	159 00	59.83	51 29
20	Coffey.....	69.40						
	Totals.....		\$214,360 31		\$142,742 26			

Leavenworth county averages as to earnings, etc., are based on the operations of the free mines only.

The items "miners' mining expenses" consist of powder, blacksmithing, oil, and renewing and repairing tools.

The aggregate cost of powder reports were filed by the operators and by me apportioned *pro rata* to all the miners using it.

The cost of blacksmithing is fixed by custom at one dollar per month or major fraction of a month for each miner.

The cost of oil for lamps is estimated on an average of one-half pint per day for each miner, for six months, at a rate of sixty-five cents per gallon.

The cost of renewing and repairing tools is estimated for each miner at \$8.10 per year.

This estimate of expenses applies to Cherokee and Crawford counties as mining is now carried on there, the cost of powder and tools in these counties being greater than required for mining in other counties. All other counties are proportioned accordingly with their expenses.

The reason for the low average for the number of days worked for each county is that so many mines load only commercial coal, thereby reducing the average of the mines that load railroad coal.

Graham Coal Company made a clerical error of 21,000 tons of coal, and corrected the same after this table was closed, making it short 21,000 tons.

RECOMMENDATIONS.

REGARDING THE MINING LAWS.

The mining laws of the state are far from being perfect. From time to time the laws have been amended and made some better, and new laws enacted intended to bring justice to the miners, and bring a more safe and healthy condition, and reduce the loss of life and accidents in and around the coal-mines. The Inspector finds, from practical experience, there is room for improvement in order that some of these laws may reach the object that they were enacted for.

THE SHOT-FIRING LAW.

This is one of the best laws in the state for both the miner and operator, though the Inspector is sorry to say that many of the miners will violate the same, and then swear that they did not do so; and then again, the shot-firer, instead of using the precaution and judgment that this law intended him to use, will as a rule start in to fire shots that he is paid ten hours' work for firing as though the work had to be done in one hour, and will tamp up and light all the shots that are in one place at one time, which is very often as high as three and four shots in one working-place, and he is in such a hurry that he usually does not take the time to notice whether the shot is a lawful one or not, thereby endangering his own life and the lives of other shot-firers; and should any one of these shots miss, as they usually do from being false tamped or from being knocked out by the flying coal from another shot, he will rush back into the working-place to try and find and fire the missed shot, and in many instances he is overcome by the powder smoke and gases from burnt powder, and has a hard time to get out of the place before he is overcome and loses his life.

Now, the Inspector would recommend that this law be so amended that the shot-firer shall not be allowed to fire more than one shot in one working-place at one time; and after he has fired one round over the part of the mine that he is firing he can again start and fire another round, and continue on until his work is done, by firing one shot at a time in any room, entry, or working-place. This will reduce the number of casualties, and the mine will be less liable to an explosion. Also, provide a penalty for coal companies' officials leaving squibs where the miner can get them for the purpose of firing his own shots.

THE LAW REGULATING THE NUMBER OF POUNDS OF POWDER THAT
SHALL BE TAKEN INTO THE MINE AT ONE TIME.

The Inspector finds this law violated in some places by the company giving out a full keg of powder at one time, which contains twenty-five pounds, although the miners are provided with a powder house, with a place for each man's powder pigeonholed off large enough for a keg of powder. The miner is supposed to have his keg of powder, and take one half into the mine at one time, and leave the remaining half; but at some mines it seems that if a miner complies with this law, and leaves his powder, the next morning when he comes after it he finds that some one has stolen his powder; and as the miner's expense is large, and he cannot afford to lose his powder, he will violate the law the next time by making a hole in the keg and putting a corn-cob or a bunch of hay into it—he will make it appear that he has halved his powder—and carry the whole keg into the mine. This in a short time will become common, and he will not go to the trouble of putting a hole into the keg, but will walk boldly off with his keg of powder and take the same into the mine.

The Inspector believes the companies are largely to blame for this violation of the law, and cannot out of justice blame the miner; and in order that this violation be stopped, the Inspector would recommend that the company be not allowed to give out more than $12\frac{1}{2}$ pounds of powder to each miner each morning; this powder to be placed in a powder can that is generally used for that purpose, as many of the larger companies are now doing, and adding a penalty for the violation of the same.

WEIGHING OF COAL AT THE MINE.

There is no law connected with mining that is more unsatisfactory than the present weighing of coal at the mine, and a change that would give justice would tend more to harmonize the two elements. The enactment of the law giving the miners the right to have a check weighman, to stand at the scales as their representative and see that the company weighman weighed the coal correctly, would solve the problem. It is a step in the right direction, but does not go far enough, as is manifested by the numerous complaints, trouble, and even strikes, over the appointment of a check weighman and the method that is used at many mines in the weighing of coal. This has been a bone of contention between the operators and the miners wherever coal is weighed. We must adopt a method which will be absolutely just to both the operator and miner, while destroying the opportunity and removing the temptation to defraud on the part of either the miner or the operator.

As the weighing of coal is being done now in a majority of places,

it will always be unsatisfactory to the miner. In many places where coal is weighed before being screened a small platform scale is used, and is usually just wide enough for the car, and the coal could be properly weighed if the car was stopped; but as this takes up too much time, and as the companies have always been opposed to the coal being weighed before being screened, the car is permitted to come off of the cage and pass right on over the scale, and is dumped, and the weights are oftener guessed at than they are correctly weighed. The law allows the miners to have a check weighman, but in the majority of cases he is only a figurehead; for if he insists upon the coal being correctly weighed the company will usually find fault with him, and then there is friction between the miners and the company, and after a few days of enforced idleness, if they will select another check weighman who is not objectionable to the company, they may resume work. The necessities of the workmen force them to give way, and agree with their employer to resume work with a check weighman that will have to stand by and see the law nullified; then the miners will say there is no use to have a check weighman if he cannot have their coal correctly weighed; and in some instances the men become discouraged and refuse to pay the check weighman, and the result is they work along without a check weighman, leaving the company weighman to weigh the coal as he pleases.

It seems impossible to legislate against action of this character, as any law which is intended for the laboring man and interferes with the right to contract or arrange with his employer for his labor is immediately declared unconstitutional, null, and void. In the face of all of this bone of contention over the weighing of coal at the mines, and the many unpleasant difficulties arising from the weighing of coal, the Inspector feels justified in recommending an amendment to the law regulating the weighing of the coal at the mine, by creating an adjuster of weights and measures, with full power to adjust the scales and compel all coal companies to correctly weigh the coal; also, to make all coal companies stop the mine-car on the scales long enough for it to be correctly weighed, or dump it into a hopper that is so constructed that coal can be correctly weighed and then dumped out over their screens; also, providing a heavy penalty for any violation of the same.

THE USE OF TWO CHECK BOARDS AT THE MINES, FOR THE PURPOSE
OF KNOWING THE NUMBER OF EMPLOYEES IN THE MINE AND WHEN
ALL ARE OUT.

It has been suggested by some of the miners to the Inspector that he recommend for enactment into law the use of two check boards at every mine in the state, for the purpose of knowing the number of employees that were at work in the mine during the day, also for the

purpose of knowing when all of the employees are out, and that every miner and underground laborer be furnished with a check. This check in the morning must be hung on a board, convenient for the employees to take off when entering into the mine; at the bottom of the mine this check must be deposited upon another board, which would indicate that that man was at work in the mine; and after that employee is through with his day's work and comes out he will take the check off the board at bottom of mine and deposit it upon the board at top of mine. This would show when all employees were out of the mine, and when the day's work is done, and when all men are out of the mine, there would be no checks upon the board at the bottom of the mine; and when the shot-firers go into the mine in the evening to fire shots they must first look at this board; and if all checks are not taken off they must go and see why the miner or mine laborer is not out, before firing. The shot-firer will very soon become acquainted with every man's working-place in the mine by his number, and could very readily locate the employee who was not out.

This matter has been suggested on account of accidents by men being caught under slate, and no one would know but what they had gone out of the mine and gone home; and if an accident did occur to any of the miners there would be no shot mark at his working-place. The shot-firer would pass by and not go into the room or working-place, and the miner would not be missed until his friends came hunting for him; and if the man lived a couple of miles away from the mine, as many do, it would be late before any one came to hunt him. If this rule was enacted into law and was applied he would be missed at firing time, and it might be the means of saving his life. Upon idle days, the mine foreman or some one empowered by him would see that all underground employees were out before he left. This law should be so constructed that no employee be allowed in the mine at work without being compelled to comply with this law; also, have this law so framed that if an employee wilfully violated the same he be punishable by twenty days' imprisonment for first offense; and also make it a fine and imprisonment for any coal company doing business in this state that will not provide the two check boards and checks and see that the law was enforced, or allowing the same to be violated.

It is the opinion of the Inspector that a law of this kind would be a benefit to both the employee and the employer, and would be the means of stopping employees from going down air-shafts into the mine for the purpose of working at night, and in many instances firing their own shots, violating the present laws and endangering their own lives. This law would work no inconvenience or expense to either employee or employer if enacted into law, but would be a great benefit to the miners and also to the companies; for they would al-

ways know when a man was in the mine, and would do away with a great deal of unpleasantness that now exists in this district, by miners sneaking into the mine for the purpose of doing work that is not allowed by law nor recognized by custom.

SINGLE-ENTRY SYSTEM.

The mining law of our state in relation to coal-mines, in its full spirit, was and is intended for the health and safety of those employed in the mines. Some of our large coal-mines are worked upon the single-entry system, and the area of the mines is large. It is an indisputable fact that the single-entry system was an old and worn-out method of coal-mining many years ago, and that it is a complete failure in the maintaining of good ventilation where the area of the mine is large, and also is very injurious to 'the miners' health; also, that many acres of coal are left when the miner is compelled to vacate his working-place for lack of proper ventilation, and it is then too expensive to properly connect it up so that it can be ventilated. This method of mining is adopted for the purpose of saving a little yard work upon double entry. This saving will work for a little while when the mine is new, but soon becomes a failure, and will then cost as much as a well-systematized mine in order to maintain ventilation; and many of the miners are slowly poisoned, for the want of pure air to dilute and carry off the poisonous gases that generate from stagnant water and old workings and other causes. This fact has dawned upon many of the large coal operators; for years they have found that no part of capital invested yields a higher rate of interest than that which is judiciously expended on ventilation, and to-day the majority of coal operators whose mines are operated upon the room-and-pillar system recognize this fact, and they cause their mines to be operated by double entry, thereby being able at all times to carry a good current of air up to the last cross-cut in entries.

Now, in view of the fact that wherever the Inspector finds the single-entry system he finds poor ventilation in a majority of the working-places in the mine, he would recommend the enactment of a law that would forever destroy the single-entry system in this state, where coal is mined upon the room-and-pillar plan. The passage of a law of this kind, with a heavy penalty for its violation, and giving the Inspector power to close the mine from further operation until they complied with the law, would be a humane act for the miner and his family, and I urge some action be taken on the same.

DUTIES OF INSPECTOR OF MINES.

Chapter 149, section 18, of the General Statutes, relating to coal-mines and mining, provides that it shall be the duty of the Inspector to visit each mine twice each year. Now, the coal productions of

Kansas are scattered over twenty counties. The four principal counties are Crawford, Cherokee, Leavenworth, and Osage. The coal production of these four counties is 3,201,027 short tons of coal, against 90,775 tons of coal in the other sixteen counties, or 97.24 per cent. against 2.76 per cent. It is an impossibility for a man to do this work as is required by law, as the area of some of those mines in the large coal-producing counties is large, and in order to give them a cursory inspection it takes from one to three days, and the distance between these mines is from one to four hundred miles. Many times when the Inspector is in one part of the state he is called back to the other to examine the cause of an accident.

When this law was enacted the coal production of Kansas was in its infancy, being, in 1880, only 550,000 tons; to-day the coal production of this state is 3,291,806 tons, an increase of 2,741,806 tons, or 83.29 per cent. The mining laws of this state have been amended from time to time, but no assistance has been given to the Mine Inspector in the way of help to assist him to do the work as the law requires; and the law is not too strong, as the mines ought to be visited and examined three or four times a year. In addition, the Mine Inspector has to correspond with every operator in the state four times a year, and with many of them more than that. Also, he has to drop his work of inspection, less answer calls, while he compiles his report and gets it ready for the state printer. This report must be a statistical report of everything in connection with the mines and the coal industry of Kansas, which is increasing every year. Now, in view of these facts, and in order to comply with the law, I would recommend an addition to the office of Mine Inspector of one Assistant Mine Inspector and one clerk, to assist in doing the office work while the Inspector was making examination of and inspecting mines.

Also, from the fact that lead and zinc mining of this state has become quite large, and produced in 1897 about \$2,500,000 worth of lead and zinc, and gives employment to a large number of employees, and is still increasing, loss of life and injury to miners being common among their mines, caused from being knocked down from bad air and powder smoke and from the results of poor timbering in mines, and there being no law to make the operators furnish a better system of ventilation, nor to make them do better timbering—in view of these facts, I would urge that the mining law be so amended as to include all lead, zinc and salt mines. If the legislature sees fit to amend the mining laws to include the mines referred to, I would recommend two Assistant Mine Inspectors instead of one, making three to look after the health and safety of the miners at all mines in the state.

THE HOME MINING COMPANY.

I recommend the repeal of chapter 148 of the Laws of 1891, which is as follows:

SECTION 1. The state of Kansas hereby grants to the Home Mining Company, a corporation organized and existing under the laws of the state of Kansas and having its principal place of business in the city and county of Leavenworth, said state, its successors and assigns, all its interest in the beds, veins or strata of coal underlying the bed of the Missouri river, within the following boundaries: On the north, a line which is the projection eastwardly to the east bank of the said Missouri river at ordinary high-water mark of the center line of Delaware street in the city of Leavenworth, in the state of Kansas; on the east, a line which is the center line of the main channel of said river; on the west, the bank of said river at ordinary high-water mark; on the south, a line which is the projection eastwardly to the east bank of said river at ordinary high-water mark of the center line of Pennsylvania street, formerly known as Mary street, in Rees, Doniphan & Thornton's addition to said city of Leavenworth; together with the right to mine for said coal, and open, make and maintain all passages, tunnels, gangways, chambers, rooms, drifts and excavations necessary and proper for the mining and removing of said coal, and for access to beds of coal on territory adjacent to that hereby granted.

SEC. 2. This act shall take effect from and after its publication in the official state paper.

Approved March 4, 1891, and published March 5, 1891.

Upon the face of this law is written a steal from the state of Kansas, by the Home-Riverside Coal Company, of a mineral grant that amounts to many thousands of dollars in royalty for coal taken out from under state land. From the lines described by the above act, this coal company had given to them all of the privileges and rights that the state of Kansas owned in the river-bed for over one mile in length upon the river, opposite this coal company's mines Nos. 1 and 2, and for a long distance north of both of their mines. They got this grant through the legislature for the purpose of driving a tunnel from one mine to the other at an average width of from six to twelve feet, drove upon an average of eight feet wide, to be used in case of accident as an escapement from one mine to the other. Now, I would recommend the repeal of this special privilege less the amount of coal stratum that is now used for a tunnel; also, would recommend that this company be allowed to continue on mining out this coal under state lands, or that which is under the river that belongs to the state, by the company paying one-fourth of a cent per bushel royalty for the privilege of taking out this coal—one cubic foot of coal to be figured as one bushel; and all money received from this coal company or any other for the privilege of mining this coal be paid into the school fund of the state of Kansas. Had one-fourth of a cent per bushel been paid for the coal they have already taken out that formerly did belong to the state, it would have increased the school fund many thousand dollars, thereby benefiting the taxpayers of the state.

MINERS WIN SCREEN CASE.

COURT OF APPEALS UPHOLDS ATTORNEY-GENERAL BOYLE'S DEFENSE
OF ANTI-SCREEN LAW.

The coal-miners have won a second victory in the fight to uphold the constitutionality of the laws known as the anti-screen laws. The Court of Appeals has handed down an opinion sustaining the lower court in declaring the latter law constitutional. A similar decision knocking out scrip will likely follow.

Attorney-General Boyle has gone down to the Cherokee district to see personally to the enforcement of the law. He intends to prosecute this work vigorously, "even if I have to swear out complaints myself," he says.

The opinion, which was very carefully and thoroughly prepared by Judge Milton, was concurred in by all the judges. The court says:

Appellant's counsel, throughout their whole argument, assume that the object of this act is to regulate the rate of wages to be paid by mine operators to their employees. We think this assumption is unwarranted, and that, in so far as the arguments of counsel rest upon it, such arguments are irrelevant to the questions which properly arise in the case. It would hardly be claimed that the act would be valid within the provisions of section 16, article 2, of the state constitution, if the body thereof contained provisions fixing the rate of wages of miners, under the title "An act to regulate the weighing of coal at the mine."

Counsel say that it was clearly the intention of the legislature to punish the act of passing the output of a coal-mine over a screen or other device which should take any part from its value in determining the wages or compensation to be paid the miners, or its value as the measure of the wages to be received; and that where any part of its value as such measure is not only not taken away but is increased by screening (as they claim is true in this case) such an act is not a violation of the law. We cannot agree with this construction of the statute. It was manifestly the intention of the legislature to require that where a screen is used by any mine operator the same shall not be employed prior to the weighing of the coal, if the use of the screen would take from the coal any part thereof which has a money value. It is not an act to prohibit the screening of coal, but it is an act to regulate the weighing of coal before screening. The agreed statement of facts shows that the law was disregarded in this case. It also shows that to comply with the provisions of this law would require the coal company to purchase an extra set of scales; that is, the evidence shows that, while the act has been a law of the state for more than four years, the coal company has made no provision for complying with its terms. It is plain that the company has rested upon its "constitutional rights" while declining to obey a statute. It has asserted its "inalienable right" of contracting in defiance of a law.

We regard this law as being what it purports to be as set forth in its title,

and that it is intended as a police regulation, general in its application to all owners of coal-mines and laborers who work in such mines. It is not therefore objectionable as being class legislation.

It is a matter of current history with which all citizens are familiar, that serious differences have arisen between mine operators and their employees as a result of the use of devices for screening coal. The reports of the labor bureaus of all the states wherein coal-mines are operated abound in information upon this subject. It is evident that the legislature regarded the weighing of coal at the mine before screening as being properly subject to, and requiring, regulation. Of course, where screens are not used the entire output of coal produced by each miner is weighed. Where screens are employed such output is required to be weighed, if the effect of the screening would be to remove a portion—having value—of such output. The tendency of such a law would be to prevent possible fraud and imposition by the mine owner, and to place operator and operative upon a more nearly equal basis in respect to their mutual relations and interests than would otherwise exist.

Counsel for appellant says: "It need not be argued to this court that where different propositions are open to the choice of men, whether they be miners or wood choppers, it will be presumed that the proposition most favorable to them will be accepted," and that it must be presumed in this case that the miners agreed to that proposition which insured or promised to them the best wages. The objection to this view is the assumption that an option was presented to the miners as to the basis of their contracts. As already noted, the coal company had made no provision for weighing coal before screening the same, from which it is clear that the assumed option could not have been exercised. Until proper provision is made for weighing the coal the miner cannot exercise a choice. In the way provided by this statute, and in no other way, will an equitable basis be reached. As stated by the supreme court in the case of *Holden v. Hardy*, *supra*, proprietors of coal-mines and their operatives do not stand upon an equality and their interests are to a certain extent conflicting.

But, as we view this act, it is by no means an innovation or a legislative novelty. Not only is it not novel or at variance with present legislation elsewhere, but the principle involved has been expressed in other statutes of this state for many years, and has been embodied in the laws of some of the older states for almost a century.

If statutes may be enacted for the benefit of the buyer who is otherwise without protection from fraud and imposition, laws may be enacted to protect the seller who would otherwise be liable to imposition and fraud. The difference in principle between the two instances is too ethereal. The law's consideration and protection are extended to the party occupying the disadvantageous position.

In this case it may be said, that the miner has brought the product of his toil to the market when the car containing the coal he has mined rests beneath the sun which shines not where he delves, just as truly as that the farmer has brought his hay to market when he enters the city where it is to be weighed and delivered to a customer, and where he may be required by ordinance to have it weighed on scales not of his choosing. To weigh coal before it is screened is to preserve the weight of the entire product of the miner's labor. He may be far beneath the surface of the earth, engaged in his arduous task, but if what he produces is properly weighed in accordance with the law and subsequently accounted for he is put upon a basis of equality with the purchaser, the operator of the mine, in matters of contract relating to such product.

We have examined a very large number of the authorities cited, and all of

those which bear directly upon the questions which we think actually arise in the case, and shall now review the cases cited by counsel which arose under laws concerning the weighing of coal at the mines. The case of *Millett v. People* (117 Ill. 294) involved the validity of an act the title of which was identical with that here considered. That law required that all coal mined be weighed at the expense of the operator and prior to the screening of the coal. The supreme court, in construing this act, held that it prohibited the making of contracts for computing wages of the miners upon any other basis than that of unscreened coal, and its decision against the constitutionality of the act rests upon such construction.

In conclusion: We have given the important matters here involved much consideration, with the earnest desire to reach a right decision. Our judgment has not been persuaded that this act violates either the letter or the spirit of the constitution of this state or that of the United States. We are unable to affirm that the legislature has not "adopted the statute in the exercise of a reasonable discretion." Guided by the rule laid down by our supreme court in *State v. Barrett* (27 Kan. 213), that "the action of the lawmaking power must in all cases be upheld unless its action is manifestly in contravention of the constitution," we hold chapter 188, Laws of 1893, to be constitutional and valid.

The judgment of the trial court is affirmed.

From the Pittsburg *Kansan*:

County Attorney Widby, of Crawford county, is entitled to a great deal of honor for the success of pushing the anti-scrip-and-screen laws through the courts. We would not seek to detract one iota from what Attorney-General Boyle may have done, but we know that Mr. Boyle does not hesitate to award to Mr. Widby the full credit for the victory won.

Right here the Inspector wants to add, that Mr. W. L. A. Johnson, labor commissioner, is entitled to a great deal of credit for his untiring efforts in gathering evidence and urging the pushing of these laws through the courts for their final settlement, so that they might be enforced, and the people receive the benefit that these laws intended they should receive.

GLOSSARY OF TECHNICAL MINING TERMS.

The following is a glossary of the terms most frequently used by miners throughout the states:

After-Damp. The mixture of gases remaining in a mine after an explosion of fire-damp, which may consist of carbonic-acid gas, carbonic oxide, water vapor (quickly condensed), nitrogen, and, in some cases, free hydrogen, but usually consists principally of carbonic-acid gas and nitrogen, and is therefore irrespirable.

Air-Pipe or Air-Box. Square boxes made of wooden boards, in sections eight to sixteen feet long, for the conveyance of air into tunnels, etc.; also, iron pipes used for conveyance of compressed air.

Air-Stack. A ventilating chimney.

Airway. Any passage used for passage of air for ventilation.

Anemometer. An instrument used for measuring the velocity of the ventilating current of air.

Arenaceous. Sandy rocks are arenaceous when they contain a considerable percentage of sand.

Argillaceous. Clayey. An argillaceous rock is one that contains a considerable percentage of clay, or has some of the characteristics of clay.

Band. Interstratified rock in coal.

Brushing. To cut down the roof of an entry or passageway in the mine, after the coal has been mined away, to make height for mules, etc.

Bank. A word often used amongst miners in referring to the coal-mine.

Battery. Any structure built of timber or plank to keep the coal in the room, or prevent it from sliding down a chute when not wanted. This is used on pitching veins.

Bear, to Bear in. Usually applied to underholing or undermining.

Bed. A regular member of a stratified series deposited or formed after the underlying and before the overlying rock.

Bed-Rock. The solid rock underlying the soil drift or alluvial deposit.

Bench. A natural terrace marking the outcrop of any stratum; a division of a coal-seam separated from the remainder by a parting of slate, shale, iron pyrites, sulphur, or other foreign matter.

Bit. A drilling chisel.

Black Damp, Choke-Damp. Carbonic-acid gas = CO_2 ; thus distinguished from white damp or carbonic oxide = CO .

Blossom. Outcrop of a coal-bed or mineral deposit.

Blower. A strong discharge of gas from a fissure.

Blowout, to Blow out. A blast is said to blow out when it acts like a cannon, throwing out the tamping without bringing down the rock or coal.

Bone Coal, Bone. Slaty or argillaceous coal or carbonaceous shale occurring in coal-seams.

Bottom Lift. The lowest or deepest lift.

Bottom. The landing at the bottom of the shaft or slope; the lowest point of mining operations; the floor-bottom rock, or stratum, underlying a coal-bed.

Brattice. A board or plank lining or partition, in any mining passage, to confine air and force it into the working-places. Its object is to keep the intake air from finding its way by a short route into the return airway.

Brattice Cloth. A heavy cloth or canvas, often covered with some water-proof material, for temporarily forcing air into the face of the room or entry; also used in place of doors at the entrance of rooms. They are then called "sheets." Such brattice cloth should be unflammable in gaseous mines; this is not so, however, in many instances.

Bridle Chains. Safety chains to support the cage if the middle link should break; when two chains are used in a slope, (instead of attaching the rope by a single chain to the draw-bar of a car,) they are also called bridle chains.

Bucket. The piston of a lifting pump; or, a bucket used in sinking shafts.

Buntings. Timbers placed horizontally across a shaft to carry the cage guides and column pipes; also to strengthen the shaft timbering.

Butty. A partner or comrade working with another in a coal-mine.

Cage. A platform on which men and cars are raised to the surface from the mine.

Cap, Cap-Piece. A piece of plank put on the top of a prop next to the roof.

Cap. The pale bluish elongation of the flame of a safety-lamp, caused by the presence of gas; fire-damp.

Carbonaceous. Coaly; containing carbon or coal.

Carboniferous. Containing or carrying coal; thus, carboniferous rocks, the Carboniferous formation.

Cave, to Cave in. Falls from the roof or sides of the entries or rooms of a mine.

CH₄. The chemical notation for carbureted hydrogen, or fire-damp.

Chain Pillar. A pillar left to protect the top of entry and airway, and running parallel between these passages.

Charge. The amount of powder used in one blast or shot.

Chocks. Shanties; a building built with logs or props crossing one another to support the roof in a place where an extra creep of the stratum takes place.

Clanny Lamp. Safety-lamp invented by Doctor Clanny. This lamp differs from the Davy in having the lower portion of the covering made of glass instead of being wholly gauze.

Clinometer. A small pocket instrument, provided with a spirit-level and graduated arc, for measuring the angle of a dip.

Coal-Measures. The carboniferous formations.

Cleavage. The property of splitting more readily in some directions than others.

Collar. The horizontal timber resting upon two upright or inclined legs or props, for the support of the roof in an entry or airway.

Colliery. This term is used to denote not only the mine, but includes also all the structures that make up the plant of the surface; the mine and all its adjuncts.

Column Pipes. Cast-iron or wrought-iron pipes through which the water is conveyed from the mine pumps to the surface.

Conglomerate. The rock formation, consisting of pebbles and fragments of various rocks cemented together.

Creep. A squeeze or crush, forcing the pillars down into the floor or up into the roof, which often gives the miner the impression that the floor is rising.

Crevise. A fissure in rock or coal.

Cribwork. A structure composed of horizontal frames of timber laid one upon another, built like a log cabin.

Cribbing. Timbering a shaft with cribwork; it commonly extends from the surface down to bed-rock.

Crop. To come to the surface and crop out.

Cross-Cut or Cross-Heading. A passage driven for ventilation through the pillar between entry and airway.

Davy Lamp. A safety-lamp invented by Sir Humphrey Davy, with a fine wire gauze inclosing the flame; 784 apertures to the square inch; framework brass.

Dead Air. The air of a mine is said to be dead or heavy when it contains carbonic-acid gas (black damp), or when the ventilation is sluggish.

Dead-Work. Work not in itself productive of enough coal to pay the cost of driving, or producing nothing at all.

Derrick. The structure erected for drilling or hoisting process.

Dip. The angle of inclination of the coal-seams or mineral bed or vein, measured from a horizontal line.

Door. Doors are placed in the passages of mines to prevent the ventilating current from taking a short cut to the upcast shaft.

Door Trapper. A boy whose duty it is to open and close a mine door before and after the passage of a mine-car.

Downcast. The passage or airway through which the ventilating current passes into the mine.

Draw. To draw the pillars; robbing out the pillars after the room is exhausted.

Drift. A level tunnel driven in on the bed from the surface.

Driving. Excavating horizontal passages.

Dump. The tipple by which the cars are dumped on the slate or slack dump.

Entry. A level used for a haulage road, from which rooms are turned.

Face or Working-Face. The place at which work is being done in a room, entry, or airway.

Fault. The place where the stratum is broken by some upheaval and disappears from the continuous line.

Feeder. A spring of water encountered in mining operations, or a small blower of gas.

Fire Board. A board on which the fire boss indicates by chalk marks where gas is found in different parts of the mine.

Fire Boss. A man whose duty it is to examine the workings of the mine for accumulations of explosive gas.

Fire-Damp. CH_4 , light carbureted hydrogen, an inflammable gas, explosive when mixed with air in certain proportions.

Floor. The rock underlying the coal-seam.

Free Coal. Coal is said to be free when it is loose and easily mined.

Gang. A set of miners; a shift.

Gas. Fire-damp.

Gob. A space from which the coal has been mined and refuse or waste left therein.

Gob Fire. Fires originating spontaneously from the heat of decomposed gob.

Guide. Vertical timbers fastened to the buntings to steady and guide the cage in a hoisting shaft.

Head-Frame. A structure erected over a shaft to carry the sheaves and steady the cage.

Head-Gear. That portion of the winding machinery attached to the head-frame.

Heading. A term usually given to an entry going to the rise of the vein or cross-heading.

Hogback. A short anticlinal axis of limited extent.

Holding Through. Driving a passage through to make connections with another part of the workings, or with those of an adjacent mine.

Incline. A slope; any inclined plane, whether above or beneath the surface.

Indicator. An instrument or device for indicating the position of the cage in the shaft.

Intake. A passage by which air enters the mine or downcast.

Keeps or Keps. Catches or rests to hold the cage when it is brought to rest at the top or at any intermediate landing (commonly called shuts or fans).

Lagging. Small, round timbers, slabs or planks driven in behind the legs and over the collars, to prevent pieces of roof from falling through.

Landing. Any place where cars are taken off or put on a cage or slope.

Latches. Synonym for switch; applied to split rails or hinge switches.

Legs. Props on which the collar rests in entry or other timbering.

Level. A horizontal passage in a mine.

Lift. The number of entries from which coal is raised in a colliery. This term refers to the number of pump lifts also.

Long-Wall. A method of working coal where no pillars are left, and the roof is supported by pack-walls, gob, etc. This method is often adopted where the coal-vein does not exceed four feet.

Loose-End. A place mining alongside of a place previously worked out.

Manhole. A small place cut back into the side of self-acting planes, slopes, or entries, for the safety of the miners during the passage of the mining cars.

Manway. A small passageway used as a traveling way for the miner; also used as an airway for rooms on a pitching vein.

Measures. Rocks, or a series of rocks, having some attribute in common; thus, coal-measures, containing coal, etc.

Narrow-Work. Entries and airways, cross cuts and cross-headings.

- Needle.** An instrument or tool placed in a drill hole during the tamping of a charge, to leave on its withdrawal an opening through which the charge can be fired by a squib.
- Outcrop.** That portion of a vein bed or any stratum appearing at the surface or occurring immediately beneath the soil or alluvial debris.
- Outlet.** A passage furnishing an outlet for air (upcast, outtake), for miners, for water, etc.
- Output.** The product of a mine sent to market.
- Overcast.** A passage through which the ventilating current is conveyed over an entry or airway.
- Pack-Wall.** A wall or pillar built of gob to support the roof.
- Parting.** A layer of slate or other matter dividing two benches of a coal-seam.
- Pillar and Room, Pillar and Stall, Stoop and Room, etc.** A method of mining or working out coal.
- Pillar.** A mass of coal left to support the roof.
- Plane.** Usually applied to self-acting inclines; but any slope or incline on which coal is raised or lowered may be called a plane.
- Plat or Plot.** A map of the surface and workings underground, or of either.
- Post.** Any upright timber; applied to timbers used for propping.
- Prop.** A timber set upright, or at right angles to the dip, to support the roof rock.
- Regulator.** A frame with a sliding door to regulate the air passing into any part of the workings.
- Rendrock.** A variety of dynamite.
- Rib.** To take out the pillars, or to reduce by skipping the side of the pillars left to support the roof.
- Safety-Cage.** A cage provided with an automatic safety-catch.
- Safety-Lamp.** A lamp surrounded by a wire gauze, to prevent the direct contact of the flame with explosive gases.
- Sand-Pump.** A sludger; a cylinder provided with a stem (or other) valve, lowered into a drill hole to remove the pulverized rock.
- Scraper.** A tool used for cleaning out drill holes.
- Sheave.** A wheel with a grooved circumference over which a rope is turned, either for the transmission of power or for winding or hauling.
- Sheets**—See BRATTICE CLOTH.
- Silicious.** Containing or having the characteristics of quartz.
- Slack.** Small coal or dust from coal.
- Slides**—See GUIDES.
- Slope.** An inclined passage driven in the bed or vein, opening up the surface.
- Soapstone.** A term incorrectly applied to an unctuous rock.
- Split.** Any division or branch of the ventilating current.
- Sprag.** A short billet of wood or iron used to block the wheels of a mine-car, in place of a brake.
- Spring-Latch.** A spring or automatic switch.
- Stopping.** A brattice, or more commonly a masonry or brick wall, built in a cross-cut, to confine the air or direct it to face of workings.

Stratum. Any bed or layer; plural, *strata*.

Stump. A small pillar of coal left between the entry and the rooms to protect these passages.

Sump. An excavation in the coal or rock made below the level of the entry or shaft bottom to collect the mine water; the ditches or drains empty into it, and the pump draws it from thence.

Swamp. A local depression in the coal-bed in which the water collects.

Trapper. A door tender in the mine. Almost always a boy.

Trouble. A dislocation or fault; any irregularity in a coal-seam.

Upcast. The opening or passage through the air goes out of the mine.

Vein. This term is often applied to stratified beds, but its use should be restricted to mineral deposits.

Water-Gage. An instrument for measuring the ventilating pressure; the term is also used to denote the ventilating pressure in inches.

Whim. A horse gin used for hoisting.

White Damp. CO (carbonic oxide), a gas that may be present in the after-damp of a fire-damp explosion, or in the gases given off by a mine fire; rarely met with in mines under other circumstances.

Winding. Hoisting coal, etc.

INDEX.

	PAGE.
A mine explosion.....	79
Accidents.....	114
Anderson Brothers Coal Company.....	34
Analysis of Kansas coals.....	133
Anti-screen law.....	145
Antone Ludquist Coal Company.....	59
Arnott & Company.....	24, 34
Atchison county mines.....	70, 76- 78
A. F. Seright.....	76
A. J. Bell Coal Company.....	26, 34
A. T. Bureman Coal Company.....	73
Black Diamond Coal Company.....	59
Bourbon county mines.....	66, 73- 75
Burkville Coal Company.....	59
Burlingame Coal Mining Company.....	59
Cassna & Kelce Coal Company.....	34
Cherokee county mines.....	37, 53- 55
Chappell Coal Company.....	59
Check boards recommended.....	140
Central Coal and Coke Company.....	27, 34, 37, 39, 41, 53
Cloud county mines.....	72, 76- 78
Coal mined in 1897.....	134
Coffey county mines.....	72, 76- 78
Columbus Coal Company.....	53
Composition of Kansas coals.....	133
Coroner's inquest.....	105
Coroner's jury, verdict of.....	108
Coughlin Coal Company.....	59
C. A. Brockett Cement Works.....	73
C. McDanna Coal Company.....	73
C. P. Jenks.....	76
C. R. Smith Coal Company.....	34
Crawford county mines.....	11, 34- 36
Culbertson & Thoburn.....	73
C. W. Kelley.....	76
Douglas county mines.....	68
D. L. Heaton.....	73
D. P. Thomas Cement Works.....	73
Duties of the Inspector.....	142
Elk county mines.....	69, 76- 78
Ellsworth county mines.....	69, 76- 78
Empire Coal and Mining Company.....	34
Eureka Coal and Mining Company.....	31
Evaporation power of Kansas coals.....	130
Excelsior Coal Company.....	43, 53
Explosion at Chicopee.....	79
Exports and imports of coal.....	8
Fatal accidents.....	114, 121, 124
Franklin county mines.....	68, 73- 75
F. McGhiey.....	59
F. M. Lingo & Co.....	76

Glossary of mining terms	148
Geo. H. Cappa, jr.	73
Geo. Hendrickson & Bros.	76
George Jones.	76
Geo. Lamping, coal dealer.	73
Geo. Robinson Coal Company.	53
Hamilton & Braidwood Coal Company.	42, 53
Hamilton & Grant.	53
Home Mining Company.	144
Home-Riverside Coal-Mining Company.	73
Hotchkiss Coal Mining Company.	59
Hugh Davis Coal Company.	59
Imports and exports of coal.	7
Inspection of coal-mines:	
Cherokee county.	37
Crawford county.	11
Leavenworth county.	62
Osage county.	56
Inquest, report of.	105
Introductory remarks.	5
James Cathcart.	59
James Taylor.	59
J. H. Ransom and James Simms.	73
J. M. Fry.	76
Joe Bennett Coal Company.	53
John D. Jack Coal Company.	59
John Eddy Coal Company.	73
John & Henry Jankins Coal Company.	53
J. C. Graham Coal Company.	50, 53
J. H. Durkee Coal Company.	43, 44, 53
J. Johnson Coal Company.	59
J. E. Lewis Coal Company.	28, 34
J. M. Dyer.	73
J. R. Crowe Coal Company.	51, 53
Joseph Menzie.	76
J. T. Ryder Coal Company.	34
Kansas coal-mines.	11
Kansas Commercial Coal Company.	30, 34, 53
Kansas & Texas Coal Company.	22, 23, 34, 46, 47, 53
Labor Exchange, Branch 223.	59
Leased mines.	113
Leavenworth county mines.	62, 73-75
Leavenworth Coal Company.	73
Leavenworth coal-mine.	110
Letter of transmittal.	3
Lincoln county mines.	67, 73-75
L. Conrad Coal Company.	76
Linn county mines.	71, 76-78
L. J. Boruff Coal Company.	59
Lyon county mines.	69, 76-78
L. P. Nelson Coal Company.	73
Map of Mine No. 5, at Chicopee.	16
Map of Mine No. 7, at Flemming.	32
Midland Coal and Smelting Company.	32, 34
Miller Bros. & Company.	30, 34
Mike Garity.	73
Mine Creek Coal Company.	76
Mine explosion at Chicopee.	79
Mines leased.	113
Mining terms, glossary of.	148

Miners' wages in 1897.....	134
Mt. Carmel Coal Company.....	11, 13, 34, 59
Newt. Davall & Co.....	73
N. E. Warner.....	76
Non-fatal accidents.....	114, 121, 124
Osage county mines.....	56, 59- 61
Pat. Ryan.....	59
P. Carleton Coal Company.....	34
P. G. Soper Coal Company.....	76
Patterson Coal Company.....	59
Paynter Long-Wall Mining Machine Company.....	59
Penitentiary mine.....	73
Pittsburg Coal and Coke Company.....	29
Pittsburg & Midway Coal Company.....	25, 34
Powder, amount to be taken into mine.....	139
Production of coal, by counties.....	6
Recommendations by the Inspector.....	138
Report to Governor on Leavenworth coal-mine.....	110
Robert Elliott and R. M. Benten.....	59
Robert Simpson.....	59
Rodell & Sprain.....	59
Ross Coal Company.....	59
Russell county mines.....	69, 76- 78
Screen law case.....	145
Shawnee county mines.....	68, 73- 75
Seright & Swanson.....	76
Single entry system.....	142
Smith & Woodward.....	76
Southwestern Coal Company.....	34
Southwestern Coal and Improvement Company.....	48, 49, 51, 53
Stone & Dixon Coal Company.....	50, 53
Strikes.....	125
Survey of Leavenworth coal-mine.....	110
S. J. Carlson.....	59
The shot-firing law.....	138
T. M. Barrett Coal Company.....	34
Thos. Noble & Son.....	59
T. S. Kelley.....	76
Thos. Struthers.....	76
Thomas Whitecomb.....	59
Wages of miners in 1897.....	134
Wear Coal Company.....	15, 16, 17, 34, 45, 53
Weighing coal at mine.....	139
Western Coal and Mining Company.....	18, 19, 20, 34
Weir Junction Coal Company.....	27, 34
Western Coal Company.....	59
Western Fuel Company.....	59
William H. Barrett.....	26, 53
Wilson Bros.....	31
W. A. Eaton & Son.....	73
W. F. Cushing Coal Company.....	76
W. H. Huntsinger.....	53
Wm. H. Thomas.....	59
Wm. Peterson.....	59
W. E. Porter.....	73
Wm. M. Walker Coal Company.....	34
W. T. F. Donald Coal Company.....	76
World's product of coal.....	9
Verdict of coroner's jury.....	108

ELEVENTH ANNUAL REPORT

OF THE

INSPECTOR OF COAL-MINES,

STATE OF KANSAS.

FOR THE

YEAR ENDING DECEMBER 31, 1898.



TOPEKA, KAN.
W. Y. MORGAN, STATE PRINTER,
1899.

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LETTER OF TRANSMITTAL.

WEIR CITY, KAN., June 1, 1899.

Hon. J. W. Leedy, Governor:

SIR—Herewith, in compliance with the mining laws relating to mines and mining, I hand you the Eleventh Annual Report of the State Coal-mine Inspector, for the year ending December 31, 1898.

Very respectfully,

GEO. T. MCGRATH,

State Inspector.

PR1011



INTRODUCTION.

DURING the year 1898 there were 8122 men and boys employed in and around the coal-mines in Kansas, and they produced 3,860,405½ tons of coal, valued, at the mine, at \$4,825,507.27. This indicates an increase in the production of coal in Kansas over the year 1897 of 568,599 short tons. It is the largest production of coal in the history of the state. The next largest was in the year 1894, when the big strike was on in the East. Kansas' production of coal that year was 3,611,214 short tons, valued at \$4,899,774, and gave employment to 10,088 men and boys in and around the mines, or 1966 more than were employed during the year 1898. In addition, the selling price of coal at the mine in 1898 was an increase over 1897 of 18 cents per ton, and the miners received more days work during the year. The result was that both the miner and the operator made fair money for their year's work.

This increase is wonderful, as shown by the returns from the coal operators and in the tables of this report. Eighteen counties fell off in their production of coal, while two counties, Crawford and Cherokee, increased over the year 1897 as follows: Crawford, in 1897, produced 1,590,620 tons; Cherokee, 1,061,409 tons; or a total of 2,652,029 tons—70.56 per cent. of the entire output in the state.

For the year 1898, Crawford county produced 1,890,157 tons; Cherokee, 1,309,868 tons; a total of 3,200,025 tons—or 85.46 per cent. of all coal produced in the state. This is an increase of 547,996 tons for Crawford and Cherokee counties during the year 1898 over 1897. These two counties are destined to beat this production, as there are many new shafts in both counties now being sunk which ought to largely increase their production.

One more fact these figures show is the increased selling price of coal at the mine. The operators can very readily pay their miners and mine laborers a reasonable increase of wages.

During the year 1898 there was a total of 51 accidents—17 deaths and 34 non-fatal accidents; or, 227,094 tons of coal was produced for each fatal accident, and 113,544½ tons for each non-fatal accident. Three of the fatal accidents were in mine No. 5, at Chicopee, when the mine exploded, which I reported in full in my report of 1897, and a majority of all other accidents was from premature explosion of

shots—going back into rooms too soon to fire missed shots. Accidents can be greatly reduced in number if the shot-firer would fire his round on out before going back to fire missed shots.

There were no strikes of any importance during 1898; only a few small local difficulties that were soon settled. This does not include the lead and zinc business of Cherokee county.

Crawford county is the largest coal-producing county in the state. During the year 1898 the coal companies gave employment to 2503 miners and 39 boys; all other employees make a total of 3036. They worked 185 days during the year, and produced 1,989,157 tons of coal, valued at \$2,048,831.61. This is an increase over the year 1897 of \$482,090.17.

Cherokee county is the second largest coal-producing county in the state. During the year 1898 it produced 1,309,868 tons of coal, valued at \$1,336,065.36; gave employment for 144 days during the year to 1928 miners and 85 boys; all others make a total of 2548 employees. In addition, this county is a large producer of lead and zinc, its product amounting to not less than \$4,000,000.

Leavenworth county is the next largest coal-producing county. During the year 1898 it produced in its free mines 254,294 tons of coal, and at the state mine 51,022 tons, making a total of 305,315 tons, valued at \$412,175.25; gave employment 181 days to 485 free miners and 28 boys; all other employees make a total of 654 employees in free mines. Two hundred and ninety-eight convicts are employed in and around the state mine. This county fell off in its production of coal for the year 1898 as against 1897.

Osage county produced 179,070 tons of coal, valued at \$295,374.80, and gave employment for 178 days to 837 miners and 67 boys; all others make a total of 1201 employees. This county is also falling off each year in its production of coal.

All other counties produced 76,594 tons of coal, valued at \$181,527.78, and gave employment off and on during the year to 421 men, in a mixed way, some using teams to scrape the dirt off the coal, while others mined in a "go-as-you-please" way. Shafts, slopes and drifts were worked. But in all of these counties production of coal fell off during 1898, and they have gradually been doing so for several years. The thicker and cheaper-produced coal is gradually closing them down, because they cannot profitably compete with the cheaper coal-fields.

PRODUCTION OF COAL IN KANSAS IN 1898.

COUNTIES.	Short tons.	Percent, of total.
Crawford.....	1,989,157	51.52
Cherokee.....	1,309,868	33.94
Leavenworth.....	305,316	7.91
Osage.....	179,070	4.64
Bourbon.....	30,000	.77
Linn.....	20,633	.53
Franklin.....	6,657	.17
Atchison.....	5,400	.14
Lyon.....	740	.02
Shawnee.....	609	.02
Cloud.....	400	.01
Ellsworth.....	95½	.....
Elk.....	75	.....
Lincoln.....	350	.01
Russell.....	35	.....
Republic.....	12,000	.31
Labette.....		
Chautauqua.....		
Brown.....		
Coffey.....		
Totals.....	3,860,405½	99.99

INSPECTOR OF COAL-MINES.

ALL OTHER KANSAS COUNTY COAL-MINES.

Office No.	Name of operator or company.	Post-office address.	Name or number of mine.	Name of pit boss or underground foreman.	Location of mine.	Has mine railroad connection?	Name of railroad.
	Leavenworth County.						
1	Leavenworth Coal Company.....	Leavenworth	Old 1.....	Grant Parker	Three-quarters of mile north-east Leavenw. Union depot, Second and Maple streets..	Yes.	{ Mo. Pac., U. P.
2	The Home-Riverside Coal Mining Co. .	Leavenworth	1.....	John Paterson	Leavenworth, one mile south of mine No. 4.....	Yes.	{ Mo. Pac., S. F., U. P.
3	The Home-Riverside Coal Mining Co. .	Leavenworth	2.....	Thomas Graham.....	Leavenworth, one mile south of mine No. 1.....	Yes.	{ Mo. Pac., S. F., U. P.
4	State prison mine.....	Lansing.....	Prison mine,	Dave Casselman.....	Lansing.....	Yes.	{ Mo. Pac., U. P., S. F.
	Totals.....						
	Linn County.						
5	Seright & Swanson Coal Company.....	Pleasanton.....	1.....	Ed. Swanson	2½ miles east of Pleasanton,	No.	
6	Mine Creek Coal Company.....	".....	1.....	Geo. S. Brown	2½ miles northeast of Pleasanton.....	Yes.	Mo. Pac.
	Totals.....						
	Lyon County.						
7	Kelley & Verlin Coal Company.....	Neosho Rapids	1.....	Ed. Verlin.....	2½ miles east of Neosho Rapids	No.	
8	Geo. Hendrickson Bro's, Coal Company,	Neosho Rapids	1.....	Walter Hendrickson.....		"	
9	J. M. Fry Coal Company.....	".....	1.....	J. M. Fry.....	3½ miles east of Neosho Rapids	No.	
	Totals.....						
	Franklin County.						
10	S. H. Caple Coal Company.....	Ransomville	1.....	S. H. Caple.....	One-third mile north west of Ransomville.....	No.	
11	S. E. Richardson Coal Company.....	Pomona.....	Dyer.....	S. E. Richardson.....	Two miles south and three-fourths mile west Pomona.	No.	
12	J. H. Ransom & Co. Coal Company	Ransomville or Ottawa.....	1.....	James Sims	Ransomville	Yes.	Santa Fe.
	Totals.....						

Atchison County.				S. K. Snell J. Maynard	2¼ miles south of Atchison. 2½ miles south of Atchison.	Yes, No.	Mo. Pac.
	Atchison	1.	1.				
13 Donald Bros. Coal Company.....							
14 Jones Coal Company.....							
Totals.....							
Lincoln County.				L. B. Nelson.	Southwest quarter, sec. 1, S. Denmark nine miles.....	No.	
	Denmark.	Little Timber.					
15 L. B. Nelson Coal Company.....							
Shawnee County.				W. A. Eaton.	Three miles west of Topeka,	No.	
	Topeka, box 429.	1.					
16 W. A. Eaton Coal Company.....							
Russell County.				W. F. Cushing.	Four miles northeast of Bunker Hill.....	No.	
	Bunker Hill.	1.					
17 W. A. Cushing Coal Company.....							
18 N. E. Warner Coal Company.....	Bunker Hill.	1.		G. T. Warner.	Northeast of Bunker Hill...		
Totals.....							
Elk County.				H. G. Emmora	Two miles south and three miles west of Howard.....	No.	
	Howard	Jinks					
19 Hutchinson & Emmora Coal Co.,.....							
Ellsworth County.				C. W. Kelley	3½ miles southwest of Wil- son.....	No.	
	Wilson.	Smoky Hill.					
20 C. W. Kelley.....							
Cloud County.				Winding Blade,	Four miles west of Hollis...	No.	
	Minersville.	Smith mine.					
21 Smith & Jackson Coal Company.....							
22 Bourbon county*.....							
23 All other counties†.....							
Totals.....							

* About 100 miners strip and drift coal in and around Fort Scott a few months in the year. There being no regular companies, the total production is estimated, which gives employment to about sixty men and teams to haul and sell around Fort Scott, at three dollars per ton, delivered.

† And small producers of coal not listed, where changes are so often that they do not report to the Inspector. Total production estimated.

ALL OTHER KANSAS COAL-MINES—CONTINUED.

TONS OF COAL PRODUCED. (2000 pounds to the ton.)				EMPLOYEES.													
Office No.	Kind of opening.	Kind of power used.	Horse-power of engine..	Lump.	Nut and slack.	Mine run.	Total	Miners.....	Boys.....	Mule drivers and pushers.....	Cagers.....	Pit bosses, track-layers, and road men.....	Engineers, fire-men, and pump men.....	Weighmen and dumpers.....	Car trimmers and prop men...	Blacksmiths and carpenters.....	Total.....
1	Shaft.....	Steam.....	800	.....	.....	128,639	128,639	231	13	11	2	8	9	11	4	5	294
2	"	"	750	102,045	23,610	.....	125,655	254	15	15	4	16	5	42	5	4	360
3	"	"	150	29,867	15,672	5,483	51,022	206	.....	34	6	7	6	27	6	6	298
4	"	"	550	.....	.....	.....	305,316	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5	Yes.....	Horse.....	.....	1,689	.....	.....	1,689	8	.....	.....	.....	1	.....	1	.....	.....	10
6	"	Steam.....	40	18,944	.....	.....	18,944	43	.....	3	.....	1	2	1	1	.....	51
7	Yes.....	Horse.....	.....	300	.....	.....	300	8	.....	.....	.....	1	.....	.....	.....	.....	9
8	"	"	.....	120	.....	.....	120	7	.....	.....	.....	1	.....	1	.....	.....	9
9	"	"	.....	320	.....	.....	320	4	.....	.....	.....	1	.....	.....	.....	.....	5
10	Drift.....	.....	.....	408	.....	.....	408	4	.....	1	.....	1	.....	1	.....	.....	7
11	"	"	.....	2,216	.....	.....	2,216	20	.....	.....	.....	1	.....	1	.....	.....	22
12	Shaft.....	Horse.....	.....	4,033	.....	.....	4,033	23	2	1	.....	1	.....	1	.....	.....	28
13	Drift.....	.....	.....	3,000	.....	.....	3,000	10	.....	.....	.....	1	.....	.....	.....	.....	11
14	"	"	.....	2,400	.....	.....	2,400	12	.....	1	.....	1	.....	.....	.....	.....	14
15	Shaft.....	Horse.....	.....	350	.....	.....	5,400	4	.....	.....	.....	1	.....	.....	.....	.....	5
16	Shaft.....	Horse.....	.....	609	.....	.....	609	16	2	.....	.....	.....	.....	1	.....	.....	19

[illegible]

ALL OTHER KANSAS COAL-MINES—CONCLUDED.

Office No....	Average price paid for mining.		Number of days mine worked....	Number of kegs of powder mine used during the year.....	Estimated value of fixtures.....	Estimated value of mine.....	Casualties.		Average selling price of coal at mine.				Average wages paid day men above ground....	Average wages paid day men under ground...	Size and depth of shaft, in feet.....	Remarks.
	Lump...	Mine run....					Killed ..	Injured.	Lump...	Nut.....	Slack...	Mine run....				
1	\$0 80	.....	219	.....	\$35,000 00	\$30,000 00	.....	1	.....	.....	.....	\$1 36	\$1 75	\$2 25	11x12-710	
2	80	.....	163	.....	(25,000 00	20,000 00	.....	.....	\$1 60	\$1 25	\$0 60	1 15	1 75	2 25	9x14-720	
3	.....	.....	310	.....	20,000 00	20,000 00	.....	.....	.....	.....	.....	1 40	.....	.....	10x14-720	
4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15x9-713 ₁₂	
5	\$0 75	\$0 75	150	.....	\$100 00	\$1,000 00	.....	.....	\$1 25	\$1 25	\$0 25	\$1 25	\$1 00	\$2 00	61x12-50	
6	75	75	.....	.....	.....	30,000 00	.....	.....	1 10	.....	.....	1 00	1 50	2 00	12x 6-90	
7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
8	\$1 75	\$1 75	80	80 lbs.*	\$60 00	\$200 00	.....	.....	\$2 25	.....	.....	\$2 25	\$1 50	\$1 25	5x9-18	
9	1 75	1 75	78	.....	300 00	800 00	.....	.....	2 25	.....	.....	2 25	2 00	2 00	6x11-25	
10	1 75	1 75	120	.....	25 00	500 00	.....	.....	2 25	.....	.....	2 25	1 50	1 25	4x10-27	
11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
12	\$1 62 ¹ ₂	\$1 62 ¹ ₂	156	.....	\$40 00	\$500 00	.....	.....	\$3 50	.....	.....	\$3 50	\$1 50	\$1 75	.....	
13	1 25	1 25	160	.....	1,500 00	5,000 00	.....	.....	1 75	.....	.....	1 75	1 50	1 75	.....	
14	1 20	1 20	300	25	.....	.....	.....	.....	1 80	.....	.....	1 80	1 25	1 75	6x10-80	
15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
16	\$1 25	\$1 25	300	.....	\$1,000 00	\$1,200 00	.....	.....	\$3 00	.....	.....	\$3 00	\$1 50	\$1 75	.....	
17	1 25	1 25	210	.....	100 00	300 00	.....	.....	3 00	.....	.....	3 00	1 50	1 75	.....	
18	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
19	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
20	\$2 00	\$2 00	180	.....	\$100 00	\$500 00	.....	.....	\$3 00	.....	.....	\$3 00	\$1 25	\$1 50	4x10-42	
21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
22	1 62 ¹ ₂	1 62 ¹ ₂	275	.....	175 00	200 00	.....	.....	2 62 ¹ ₂	.....	.....	2 62 ¹ ₂	1 25	1 50	5x12-31	

17	.....	40	\$1 75	\$1 75	\$25 00	\$50 00	.....	.....	\$2 50	.....	\$2 50	\$1 00	\$1 25	.....
18	.....	20	2 50	2 50	20 00	50 00	.....	.....	3 00	.....	3 00	1 00	1 25	.....
.....														
19	.....	104	\$1 75	\$1 75	\$20 00	\$100 00	.....	.....	\$2 50	.....	\$2 50	\$1 00	\$1 25	.....
20	.....	50	2 00	2 00	100 00	500 00	.....	.....	3 00	.....	3 00	1 25	1 50	.....
21	.....	80	1 40	1 40	225 00	150 00	.....	.....	2 25	.....	2 25	1 25	1 50	4x6-70
22	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3 00	.....	.....	.....
23	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	\$1 658	.....	.....	.....

* Dynamite.

OSAGE COUNTY COAL-MINES.

Office No.	Name of operator or company.	Post-office address.	Name or number of mine.	Name of pit boss or underground foreman.	Location of mine.	Has mine railroad connection ?	Name of railroad.
1	Mount Carmel Coal Company.....	Topeka.....	12.....	Andrew Anderson.....	One-half mile south of Santa Fe depot, Scranton.....	Yes.	A. T. & S. F.
2	Mount Carmel Coal Company.....	Topeka.....	10.....	Thomas Ellwood.....	One-half mile south of Santa Fe depot, Scranton.....	Yes.	A. T. & S. F.
3	Mount Carmel Coal Company.....	Topeka.....	23.....	E. Thip.....	Osage City.....	"	"
4	"	"	24.....	Archie Craig.....	"	"	"
5	"	"	27.....	James Main.....	"	"	"
6	Western Fuel Company.....	Osage City.....	2.....	Wm. Jenkins.....	Two miles east of Osage City, 1 1/4 miles east of Osage City, Osage City.....	"	"
7	"	"	5.....	C. J. Swanson.....	Osage City.....	"	"
8	"	"	6.....	Chas. Taylor.....	One mile northwest of Osage City.....	"	Mo. Pac.
9	Osage City Labor Exch., branch No. 223,	"	1.....	Eric Fellman.....	"	No.	"
10	Chapell Coal Company.....	Scranton.....	3.....	Geo. Chapell.....	Two miles east Burlingame.....	Yes.	A. T. & S. F.
11	"	"	2.....	John Goblon.....	One-half mile west Scranton, Southeast of Burlingame.....	No.	"
12	Hugh Davis Coal Company.....	Osage City.....	1.....	L. J. Boruff.....	Peterton.....	"	"
13	L. J. Boruff Coal Company.....	Peterton.....	2.....	M. Thomas.....	One-half mile east of Burlingame.....	Yes.	A. T. & S. F.
14	Poynter Long-wall Mining-machine Co.,	Topeka.....	5.....	"	"	Yes.	A. T. & S. F.
15	John D. Jack Coal Company.....	Burlingame.....	Sand-bank 3.....	J. D. Jack.....	One-fourth mile south of Burlingame.....	Yes.	A. T. & S. F.
16	Hotchkiss Coal and Mining Company..	Burlingame.....	Fair-grounds.....	J. Hotchkiss.....	One-fourth mile south of Burlingame.....	Yes.	A. T. & S. F.
17	Burkville Coal Company.....	Burlingame.....	Burkville.....	D. Rees.....	One-half mile east of Burlingame.....	No.	"
18	Ross Coal Company.....	Burlingame.....	Ross coal-s'ft.....	Alex. Ross.....	Two miles east of Burlingame.....	No.	"
19	Thomas Whitcombe.....	Burlingame.....	1.....	Thomas Whitcombe.....	Two miles east and one-half mile north of Burlingame.....	No.	"
20	S. J. Carlson Coal Company.....	Osage City.....	3.....	S. J. Carlson.....	Osage City.....	Yes.	A. T. & S. F.
21	Lars Olson & Co.....	Lawrence.....	Sunflower.....	Lars Olson.....	East of Osage City.....	No.	"
22	The Kansas Coal Company.....	Burlingame.....	Kibbe 1.....	Ed. Clift.....	1 1/4 miles west of Osage City, Burlingame.....	Yes.	Mo. Pac.
23	H. McFarland Coal Company.....	Burlingame.....	1.....	H. McFarland.....	"	No.	"
24	John Johnson Coal Company.....	Osage City.....	1.....	Charles Marks.....	One-fourth mile northwest of Osage City.....	No.	"
25	Wm. Peterson Coal Company.....	Osage City.....	1.....	Wm. Peterson.....	Two miles east of Osage City, One-fourth mile south of Burlingame.....	No.	"
26	Robert Simpson Coal Company.....	Burlingame.....	2.....	R. Simpson.....	Scranton.....	Yes.	A. T. & S. F.
27	James Taylor Coal Company.....	Scranton.....	1.....	James Taylor.....	One mile southeast of Scranton.....	"	"
28	J. Cathcart Coal Company.....	"	1.....	J. Cathcart.....	"	No.	"

29	T. Noble & Son Coal Company.....	Scranton.....	1.....	Wm. Noble.....	1½ miles southeast of Scranton.....	No.	A. T. & S. F.
30	Ryan & Co. Coal Company.....	Scranton.....	1.....	M. W. Ryan.....	1¼ miles east of Scranton..	Yes.	A. T. & S. F.
31	Belleville Coal Company.....	".....	1.....	Menelaus Ingham.....	Three-fourths mile west of Scranton.....	Yes.	A. T. & S. F.
32	All other producers*.....	.....	.....	.....	.....	.....	.....
	Totals.....	.....	.....	.....	.....	.....	.....

* Small strip pits and drifts.

Eight mines have gone out of business since 1897, and others have changed hands.

OSAGE COUNTY COAL-MINES—CONTINUED.

Office No.	Kind of opening.	Kind of power used.	Horse-power of engine..	TONS OF COAL PRODUCED. (2000 pounds to the ton.)				EMPLOYEES.									
				Lump.	Nut and slack.	Mine run.	Total.	Miners.....	Boys.....	Mule drivers and pushers.....	Cagers.....	Pit bosses, track-layers, and road men.....	Engineers, fire-men, and pump men.....	Weighmen and dumpers.....	Car trimmers and prop men...	Blacksmiths and carpenters.....	Total
1	Shaft.....	Horse.....		51,426			51,426	96	11	6	2	6		4	1	1	247
2	"	"						100	20								
3	"	"						41	6								
4	"	"						74	16								
5	"	"		31,143			31,143	84	4			6		4		1	236
6	"	"		5,032			5,032	28				2		1			31
7	"	"		3,804			3,804	28				2		1			31
8	"	"		4,173			4,173	37				1		1			39
9	"	"		7,144			7,144	37	3	3	1	1		1			46
10	"	"		5,300			5,300	24				1		1			26
11	"	"		5,597			5,597	25	1	1	1	1		1			29
12	"	"		175			175	1									1
13	Slope.....	"		320			320	4				1					5
14	Shaft.....	"		2,600			2,600	20		1		1		1			24
15	"	"		4,535			4,535	25	1	2	1	1					30
16	"	"		4,000			4,000	15	1	1							19
17	"	"		514			514	7	1		1						9
18	"	"		3,359			3,359	15		1		1					18
19	"	"		3,400			3,400	13		1		1					16
20	"	"		3,993			3,993	17				1					19
21	"	"		930			930	9				1				1	11
22	"	"		2,435½			2,435½	15				1					18
23	"	"		1,500			1,500	18		2			1				21
24	"	"		2,045			2,045	15				1					16
25	Drift.....	"		768½			768½	3				1					4
26	Shaft.....	"		2,446			2,446	14		1							10
27	"	"		1,943			1,943	9						1			4
28	"	"		400			400	3		1							8
29	"	"		6,020			6,020	5	1			1		1			37
30	"	"		7,688			7,688	30	3	2		1		1			30
31	"	"		4,381			4,381	25		2		1		1			100
32	"	"					12,000										
	Totals.....			179,070			179,070	837	67	25	6	35	2	26	1	3	1,201

OSAGE COUNTY COAL-MINES—CONCLUDED.

Office No....	Number of kegs of powder mine used during the year	Number of days mine worked ...	Average price paid for mining.		Estimated value of fixtures.....	Estimated value of mine.....	Casu- alties.		Average selling price of coal at mine.				Average wages paid day men above ground...	Average wages paid day men under ground...	Size and depth of shaft, in feet	Remarks.
			Lump...	Mine run ...			Killed ..	Injured.	Lump...	Nut.....	Slack...	Mine run ...				
1		327	\$1 00	\$1 00				1	\$1 30			\$1 30	\$1 65	\$2 00	5x15-40	
2															5x15-45	
3															5x15-35	
4															5x15-42	
5		336†	1 25	1 25	\$2,000 00	\$2,000 00		1	1 65			1 65	1 65	2 00	5x 3-45	
6		200	1 25	1 25	1,500 00	1,500 00			1 90			1 90	1 80	2 00	5½x13½-30	
7		150	1 25	1 25	2,000 00	2,000 00			1 90			1 90	1 80	2 00	5½x13½-21	
8		150	1 25	1 25	960 00	800 00			1 80			1 80	2 00	2 00	5½x13½-50	
9	350*	187	1 25	1 50	1,500 00	2,500 00			1 60			1 60	2 00	2 00	6x13-87	
10		164	1 10	1 10	1,000 00	1,000 00			1 50			1 50	2 00	2 00	5x8½-56	
11		170	1 00													
12		200	1 10	1 10	100 00	200 00			1 75			1 75	2 00	2 00	5x8-46	
13		250	1 10	1 10	2,000 00	2,500 00			1 65			1 65	1 75	1 50	5x13-132	
14		201	1 10	1 10	850 00	1,200 00			1 75			1 75	1 75	2 00	5x10-90	
15	6	260	1 10	1 10	500 00	2,000 00			1 60			1 60	1 75	1 75	5½x11-84	
16	10	200	1 10	1 10	150 00	800 00			1 75			1 75	1 65	1 80	4½x10-110	
17	2	153	1 10	1 10		10,000 00			1 70			1 70	1 65	1 25	6x12-100	
18		200	1 10	1 10		2,000 00			1 80			1 80	2 00	2 00	6x11-110	
19		165	1 25	1 25		800 00			1 80			1 80	1 50	1 00	5x10-40	
20		125	1 25	1 25	1,300 00	1,100 00			1 70			1 70	1 50	2 00	5½x15-80	
21	1	130	1 10	1 10					1 75			1 75	2 00	1 35	4½x10-84	
22	6	100	1 25	1 25	2,000 00	700 00			1 60			1 60	1 75	1 50	5x14-73	
23		165	1 25	1 25	50 00	100 00			1 70			1 70	2 00	1 75	5x10-97	
24		275	1 25	1 25					1 63			1 63	2 00	2 00	5x10½-70	
25		180	1 15	1 15	500 00	1,000 00			1 70			1 70	2 00	1 75	5x12-40	
26		100	1 00	1 00	250 00	300 00			1 63			1 63	2 00	2 00	5x14-40	
27		300	1 10	1 10	100 00	200 00			1 75			1 75	2 00	1 80	5x14-60	
28		186	1 00	1 00	700 00	2,000 00			1 50			1 50	2 00	2 00	4½x9-90	
29		162	1 00	1 00	2,000 00	5,000 00			1 58½			1 58½	2 00	1 50		
30														2		
31																
32																
		5,035					1	2	\$1 64½†			\$1 64½†				

* Dynamite, pounds. † Includes Nos. 3 and 4.

INSPECTOR OF COAL-MINES.

CHEROKEE COUNTY COAL-MINES.

Office No.	Name of operator or company.	Post-office address.	Name or number of mine.	Name of pit boss or underground foreman.	Location of mine.	Has mine railroad connection?	Name of railroad.
1	Central Coal and Coke Company.....	Weir City & Kan. City,	5.....	Archy Fulton	One mile northwest of Weir City	Yes.	Memphis.
2	Central Coal and Coke Company.....	Weir City & Kan. City,	6.....	Wm. Scott	Three-fourths mile west of Weir City	Yes.	Memphis.
3	Central Coal and Coke Company.....	Weir City & Kan. City,	8.....	J. W. Jenkins	Two miles southwest of Weir City	Yes.	Memphis.
4	Central Coal and Coke Company.....	Weir City & Kan. City,	7.....	Charles Elliott.....	One mile north of Scammon, City	Yes.	Memphis.
5		" "	11.....	Wm. Scott	2½ miles southwest of Weir City	"	"
6	Kansas & Texas Coal Company	Weir City & St. Louis,	18.....	James Duffy	One mile north of Weir City,	Yes.	Memphis.
7	" "	" "	23.....	Wm. Egley.....	1¼ miles northeast of Weir City	"	Frisco.
8	Kansas & Texas Coal Company	Weir City & St. Louis,	49.....	Pat. Welsh	Weir City	Yes.	Frisco.
9		" "	55.....	Dan. Thomyson.....	1¼ miles northwest of Weir City	"	Memphis.
10	Southwest. Coal and Improvement Co.,	Parsons	6.....	John Ryan	Mineral	Yes.	Memphis.
11	" "	" "	7.....	Joseph Davison.....	"	"	M. K. & T.
12	" "	" "	8.....	Geo. Richardson.....	"	"	"
13	J. C. Graham Company.....	Scammon	3.....	M. L. Walters	Scammon	"	Memphis.
14	" "	" "	Strip pit	John Glozbrook	"	"	"
15	" "	" "	Lone Star	M. L. Walters	"	"	"
16	Hamilton & Braidwood Coal Company,	Weir City	1.....	Stewart Hamilton.....	In center of northeast quarter of sec. 28, T. 31, R. 24.	No.	Memphis.
17	Hamilton & Braidwood Coal Company,	Weir City	2.....	Stewart Hamilton	One mile northwest Weir	Yes.	Memphis.
18	J. H. Durkee Coal Company.....	" "	1.....	Joseph Humble	One mile southwest Memphis depot, Weir City.....	Yes.	Memphis.
19		Weir City	Old No. 1.....	Joseph Humble	Three-fourths mile southwest Memphis depot, Weir City	Yes.	Memphis.
20	J. H. Durkee Coal Company.....	Weir City	5.....	Wm. Humble, G. Makin,	1½ miles northeast of Weir City	Yes.	Memphis.
21	Weir Bros. Coal Company.....	Weir City	2.....	L. S. Myers	1½ miles west of Weir City	Yes.	Frisco.
22	J. R. Crowe	" "	1.....	Ed. Kelly.....	3½ miles north of Columbus,	"	"
23	Bennett & Crowe Coal Company	" "	5.....	Henry Helm	One-quarter mile south, one-fourth mile west of Weir City	Yes.	Memphis.
24	Stone & Dixon Coal Company	Scammon	16 to 1	H. W. Dixon	One-fourth mile west of Scammon	Yes.	Memphis.
25	Excelsior Coal Company.....	Weir City	1.....	C. H. Kemp	One mile south of Weir City,	No.	Memphis.
26	Jo. Bennett Coal Company	" "	7.....	Wm. Kirby.....	Seven blocks south of Frisco depot, Weir City	No.	"

27	W. H. Huntsinger Coal Company.....	Mineral	1.....	W. H. Huntsinger	Two miles west of Mineral...	No.
28	W. S. McCormick Coal Company.....	"	1.....	W. S. McCormick	1½ miles south of Mineral...	"
29	J. H. & J. Jenkins Coal Company.....	Weir City	1.....	H. Jenkins	1½ miles southwest of Weir City	No.
30	Geo. Robinson Coal Company.....	Columbus	Robinson 1...	Geo. Robinson	3½ miles north of Columbus,	"
31	From other small producers	"	"	"	"	"
32	Hamilton & Grant Coal Company *.....	"	"	"	"	"
	Totals.....	"	"	"	"	"

* Leased by Commercial Coal Company.

NOTE.—There are three new mines that will be in operation in 1899, namely: Midland Coal and Smelting Company, Eastern Coal and Coke Company, and J. R. Crowe Coal Company. Others are making preparations to sink new shafts.

CHEROKEE COUNTY COAL-MINES—CONTINUED.

Office No.	Kind of opening.	Kind of power used.	Horse-power of engine.	TONS OF COAL PRODUCED. (2000 pounds to the ton.)				EMPLOYEES.									
				Lump.	Nut and slack.	Mine run.	Total.	Miners..	Boys.....	Mule drivers and pushers.....	Cagers.....	Pit bosses, track-layers, and road men.....	Engineers, fire-men, and pump men.....	Weighmen and dumpers.....	Car trimmers and prop men...	Blacksmiths and carpenters.....	Total.....
1	Shaft.....	Steam.....	.....	.....	.....	55,528	55,528	45	.....	6	1	3	2	2	2	1	62
2	"	"	.....	.....	.....	86,420	86,420	15	15	15	2	5	3	3	5	3	211
3	"	"	80	.....	.....	66,359	66,359	42	.....	8	1	5	3	3	2	2	66
4	"	"	.....	.....	92,983	.....	204,222	230	13	18	2	4	3	4	6	3	292
5	"	"	.....	111,239	.....	23,923	23,923	120	5	8	1	5	3	3	5	3	153
6	"	"	.....	.....	.....	68,819	135,837	140	.....	.....	.....	.....	.....	.....	.....	.....	192
7	"	"	.....	67,018	.....	36,448	90,228	95	.....	.....	.....	.....	.....	.....	.....	.....	131
8	"	"	.....	53,780	.....	4,731	11,190	24	.....	.....	.....	.....	.....	.....	.....	.....	50
9	"	"	.....	6,459	.....	7,638	16,867	56	.....	.....	.....	.....	.....	.....	.....	.....	75
10	"	"	.....	9,249	.....	26,253	90,825	110	3	10	2	3	4	6	4	3	153
11	"	"	.....	36,906	.....	33,106	102,045	117	4	9	2	5	4	2	2	2	156
12	"	"	.....	61,258	.....	1,007	10,644	30	1	4	.....	1	1	2	3	1	45
13	"	"	.....	9,617	.....	.....	43,200	60	6	6	1	1	1	.....	.....	.....	79
14	Strip pit.....	Horse, steam,	45	.....	.....	7,960	7,960	18	.....	.....	.....	.....	.....	.....	.....	.....	.....
15	Shaft.....	.....	15	.....	.....	4,000	4,000	10	.....	.....	.....	.....	.....	.....	.....	.....	.....
16	"	Steam.....	60	27,299	25,501	5,281	58,081	75	6	9	1	2	3	3	1	1	13
17	"	"	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
18	"	"	30	17,769	14,496	3,811	36,076	110	6	8	2	2	3	3	4	2	140
19	"	"	30	13,190	9,100	800	23,090	110	8	7	3	3	3	2	6	2	143
20	"	"	30	5,974	3,000	1,850	10,824	35	3	3	2	2	2	1	3	1	53
21	"	"	60	6,250	8,177	7,499	21,926	48	7	5	2	2	2	3	4	1	74
22	"	"	50	21,291	38,443	5,769	65,503	150	.....	12	2	3	2	3	6	2	180
23	Slope.....	"	65	6,930	5,670	.....	12,600	50	2	4	.....	2	1	2	2	1	64
24	Shaft.....	Horse.....	.....	.....	.....	4,800	4,800	6	1	.....	.....	.....	.....	.....	.....	.....	8
25	"	"	.....	3,000	1,000	1,000	5,000	.....	5	1	.....	1	.....	1	.....	.....	8
26	Slope.....	.....	12	975	1,035	50	2,060	13	1	1	1	1	2	1	2	.....	21
27	Strip pit.....	Steam.....	.....	54	.....	.....	54	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
28	"	"	.....	.....	.....	2,233	2,233	6	.....	.....	.....	.....	.....	.....	.....	.....	.....
29	Shaft.....	Horse.....	.....	10,060	6,060	11,050	27,170	6	.....	1	1	.....	1	1	.....	.....	10
30	"	"	.....	2,831	1,372	.....	4,203	6	.....	.....	.....	.....	.....	.....	.....	.....	8
31	"	"	.....	.....	.....	13,000	13,000	55	.....	.....	.....	.....	.....	.....	.....	.....	55
32	"	"	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
							1,309,868	1,928	85								2,548

ELEVENTH ANNUAL REPORT.

21

CHEROKEE COUNTY COAL-MINES—CONCLUDED.

Office No....	Number of kegs of powder mine used during the year	Number of days mine worked....	Average price paid for mining.		Estimated value of fixtures.....	Estimated value of mine.....	Casu- alties.		Average selling price of coal at mine.				Average wages paid day men above ground ...	Average wages paid day men under ground ...	Size and depth of shaft, in feet.....	Remarks.
			Lump ..	Mine run ...			Killed ..	Injured.	Lump...	Nut.....	Slack ...	Mine run ...				
1	3,472	159	\$0 92 $\frac{1}{4}$	\$0 55	\$8,000 00	\$1,000 00	1	...	\$1 30	\$1 05	\$0 40	\$1 20	\$2 00	\$1 75	7x15 $\frac{1}{2}$ -72	Will be done in this year.
2	3,137	136	92 $\frac{1}{4}$	55	10,000 00	25,000 00	1	1	1 30	1 05	40	1 20	2 00	1 75	7x15 $\frac{1}{2}$ -82	Abandoned.
3	3,389	191 $\frac{1}{2}$	92 $\frac{1}{4}$	55	8,000 00	25,000 00	...	...	1 30	1 05	40	1 20	2 00	1 75	7x15 $\frac{1}{2}$ -77	
4	11,006	231 $\frac{1}{4}$	92 $\frac{1}{4}$	55	9,000 00	35,000 00	...	1	1 30	1 05	40	1 20	2 00	1 75	7x16-80	New mine, August, 1898.
5	1,363	126	92 $\frac{1}{4}$	55	4,000 00	6,000 00	2	...	1 30	1 05	40	1 20	2 00	1 75	7x16-70	
6	5,167	191 $\frac{1}{2}$	92 $\frac{1}{4}$	55	3,000 00	4,000 00	...	...	...	...	...	...	1 90	1 54	8x16-66	
7	2,681	180 $\frac{1}{2}$	92 $\frac{1}{4}$	55	3,000 00	4,000 00	...	...	...	...	...	...	1 92	1 58	8x16-50	
8	203	100 $\frac{1}{4}$	*	*	2,000 00	2,000 00	...	...	...	...	...	...	2 40	2 03	8x16-50	Loaders paid 29c. ton, m. r.
9	888	83	92 $\frac{1}{4}$	55	2,000 00	15,000 00	...	...	...	...	...	...	2 10	1 65	8x16-70	About exhausted.
10	6,332	...	92 $\frac{1}{4}$	55	9,000 00	35,000 00	1	5	...	...	...	...	2 10	1 50	7x13 $\frac{1}{2}$ -122	
11	6,541	...	92 $\frac{1}{4}$	55	9,000 00	35,000 00	...	...	...	...	...	...	2 10	1 50	7x13 $\frac{1}{2}$ -110	Mine is opened to top vein.
12	247	...	95	55	6,000 00	8,000 00	...	...	1 45	1 05	50	1 25	2 00	1 50	6x12-38	
13	3,200	192	92 $\frac{1}{4}$	55	2,600 00	1,000 00	3	...	...	...	...	...	2 50	1 50	7x16-70	
14	300	...	...	55	300 00	1,000 00	1	1	...	...	...	...	2 00	1 50	6x12-34	Abandoned October, 1898.
15	350	125	92 $\frac{1}{4}$	55	8,000 00	15,000 00	...	...	...	...	...	1 05	2 10	1 60	7 $\frac{1}{2}$ x14-75	Leased to Kan. City Coal Co.
16	2,905	225	92 $\frac{1}{4}$	55	5,000 00	5,000 00	...	2	1 35	1 00	50	1 05	2 05	1 75	6x12-35	
17	1,968	84 $\frac{1}{2}$	92 $\frac{1}{4}$	55	5,000 00	5,000 00	...	...	1 35	1 00	45	1 00	2 05	1 65	...	Abandoned in 1898.
18	1,247	47 $\frac{1}{4}$	92 $\frac{1}{4}$	55	2,500 00	2,500 00	...	...	1 35	1 00	50	1 00	2 05	1 60	6x16-45	Idle part of the year.
19	632	67 $\frac{1}{4}$	92 $\frac{1}{4}$	55	5,000 00	8,000 00	...	...	1 35	1 00	50	1 25	2 00	1 75	7x14-96	Changed hands Nov. 26, 1898.
20	1,707	115	92 $\frac{1}{4}$	55	5,000 00	10,000 00	...	2	1 45	1 30	40	1 25	2 00	1 50	8x14-51	
21	3,260	141 $\frac{1}{2}$	92 $\frac{1}{4}$	55	3,000 00	3,000 00	...	...	1 35	1 05	45	1 20	2 00	1 50	...	
22	3,750	120	92 $\frac{1}{4}$	55	2,000 00	3,000 00	...	...	...	...	...	...	2 00	1 50	6x16-20	Loads on Memphis Rly. swi.
23	180	260	92 $\frac{1}{4}$	55	400 00	1,000 00	...	...	1 25	1 00	40	1 10	2 00	2 00	7x14-36	Abandoned in 1898.
24	240	270	92 $\frac{1}{4}$	55	350 00	...	...	...	1 25	1 05	50	1 10	2 00	2 00	...	
25	61	27 $\frac{1}{2}$	92 $\frac{1}{4}$	55	...	...	...	...	1 50	...	...	1 50	2 00	2 00	...	
26	...	...	92 $\frac{1}{4}$	55	300 00	...	...	...	1 50	...	50	1 12 $\frac{1}{2}$	2 00	1 75	...	Miners work day work.
27	...	110	92 $\frac{1}{4}$	55	300 00	...	...	...	1 50	...	50	1 25	2 25	1 50	...	
28	85	105	92 $\frac{1}{4}$	55	150 00	550 00	...	...	1 50	...	50	1 25	2 25	1 75	...	
29	280	200	92 $\frac{1}{4}$	55	300 00	1,000 00	...	...	1 25	...	50	1 25	1 75	1 50	...	
30	300	115	...	...	...	...	...	...	1 25	...	...	1 25	...	...	...	
31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
	63,890	3,594	...	...	...	...	8	12	...	...	...	...	...	...	...	

* Mined by machine, † Man and team.

CRAWFORD COUNTY COAL-MINES.

Office No.	Name of operator or company.	Post-office address.	Name or number of mine.	Name of pit boss or underground foreman.	Location of mine.	Has mine railroad connection ?	Name of railroad.
1	Mount Carmel Coal Company.	Topeka.	1.	P. McCall.	Frontenac	Yes.	Santa Fe.
2	"	"	5.	Ed. Flynn.	Chicopee	"	"
3	"	"	6.	John O'Leary.	1½ miles west of Frontenac.	"	"
4	"	"	Strip pit.		One-half mile north of Frontenac.	No.	"
5	Western Coal and Mining Company.	Pittsburg and St. Louis	2.	Phil. Roeser	South of Fleming.	Yes.	Mo. Pac.
6	"	"	3.	John St. John.	Fleming	"	"
7	"	"	4.	Ed. Roberts.	Northeast of Yale.	"	"
8	"	"	5.	Ed. Roberts.	South of Yale	"	"
9	"	"	6.	J. W. Gardner.	South of Fleming	"	"
10	Kansas & Texas Coal Company.	"	7.	John Barrowman.	1¼ miles west of Pittsburg.	"	Frisco.
11	"	"	20.	Wm. Egly & Barrowman.	Three-fourths mile north-west of Litchfield.	"	"
12	Kansas & Texas Coal Company.	Pittsburg and St. Louis	37.	J. W. Barrett.	Six miles southwest Pittsburg.	Yes.	Mo. Pac.
13	The Wear Coal Company.	Pittsburg	54.	W. C. Kirkwood	Four miles south Pittsburg.	Yes.	Frisco.
14	"	"	2.	Wm. McKinley.	One mile southeast Frontenac.	"	Memphis.
15	The Wear Coal Company.	Pittsburg	5.			Yes.	Santa Fe.
16	Pittsburg & Midway Coal Mining Co.	Midway	6.	J. Kirkwood, sr.	One mile north of Pittsburg.	"	Memphis.
17	"	"	Strip pit.	Contract work.	Four miles south Pittsburg.	"	Memphis.
18	"	"	3.	J. E. Bevins, contractor.	One-fourth mile south of Midway	Yes.	Santa Fe.
19	Pittsburg & Midway Coal Mining Co.	Midway	4.	Thomas R. Jones.	Three-fourths mile north-west of Midway	"	Frisco.
20	"	"	5.	W. M. Morgan	One-half mile northeast of Midway	Yes.	Santa Fe.
21	W. A. Swan Coal Company.	Pittsburg	1.	R. Radliff	1½ miles west of Pittsburg.	Yes.	Frisco.
22	Pittsburg Coal and Coke Company.	"	2.	V. Gladis.	Six miles southwest Pittsburg.	No.	Memphis.
23	W. M. Walker Coal Company.	Pittsburg	1.	J. H. Walker.	1½ miles northeast K. C. P. & G. depot, Pittsburg.	Yes.	Memphis.
24	Midland Coal and Smelting Company.	Bruce.	1 and 2.	Geo. Wallace.	One-half mile east of Bruce.	No.	"
25	Weir Junction Coal Company.	Weir City	Schwab.	J. G. Schwab.	Three miles north of Weir City	Yes.	Memphis.
26	W. H. Miller Coal Company.	Mulberry.	1.	J. Mathews	Two miles northwest Mulberry	Yes.	Memphis.
27	Arnott & Co.	Pittsburg	1.	D. Arnott	1½ miles south Frontenac.	Yes.	Memphis.
	Lewis Coal Company	Coalvale	1.	C. Hanna.	Coalvale	Yes.	Santa Fe.
						No.	{ K. C. P. & G.

28	A. Bell Coal Company.....	Coalvale	1.....	A. J. Bell.....	Three-fourths mile north-east of Coalvale.....	Yes.	Memphis.
29	C. R. Smith	Cherokee.....	Maplewood ..	C. R. Smith	4½ miles southwest Cherokee	No.	.....
30	Eureka Coal Company	Pittsburg	1.....	John H. Anderson.....	Northwest of Frontenac.....	Yes.	K. C. P. & G.
31	Central Coal and Coke Company	Nelson.....	9.....	Rob. Gilchrist	One-half mile west Nelson.....	No.	.....
32	Wilson Brothers Coal Company.....	Pittsburg	1.....	R. Wilson.....	One mile northeast of Pittsburg	Yes.	K. C. P. & G.
33	Kansas Commercial Coal Company.....	Kansas City.....	Fuller mine..	C. Newlands	Fuller	No.	.....
34	All other producers (estimated).....	.....	.....	.....	.....	Yes.	.....
	Totals.....	.....	.....	.....	.....	.....	.....

CRAWFORD COUNTY COAL-MINES—CONTINUED.

Office No.	Kind of opening.	Kind of power used.	Horse-power of engine.	TONS OF COAL PRODUCED. (2000 pounds to the ton.)				EMPLOYEES.									
				Lamp.	Nut and slack.	Mine run.	Total.	Miners.	Boys.	Mule drivers and pushers.	Cagers.	Pit bosses, track-layers, and road men.	Engineers, firemen, and pump men.	Weighmen and dumpers.	Car trimmers and prop men.	Blacksmiths and carpenters.	Total.
1	Shaft.	Steam	175	182,745	120,629	.....	303,374	340	4	30	4	32	3	2	12	2	429
2	"	"	400	140,865	90,888	1,498	232,991	240	4	12	3	16	3	7	7	2	294
3	"	"	175	.....	.....	1,569	1,569	10	.....	.....	.....	.....	.....	.....	.....	.....	10
4	Yes.	.....	50	1,874	9,007	6,286	21,871	32	.....	3	.....	8	2	1	.....	.....	41
5	"	Steam	50	9,386	21,300	387	49,881	114	2	13	2	5	3	1	4	2	146
6	"	"	50	28,194	21,300	387	49,881	114	2	13	2	5	3	1	4	2	146
7	"	"	50	39,889	26,592	48,911	114,392	162	2	17	3	6	4	1	3	1	149
8	"	"	50	98,854	46,271	7,522	152,759	177	4	6	3	3	3	1	3	3	120
9	"	"	150	67,544	61,286	8,470	137,300	157	4	6	3	3	3	1	3	3	183
10	Shaft.	"	.....	16,415	20,970	37,385	55	55	.....	.....	.....	.....	.....	28	.....	.....	83
11	"	"	.....	45,008	51,557	96,565	118	118	.....	.....	.....	.....	.....	37	.....	.....	155
12	"	"	70	43,307	29,451	8,166	80,924	100	2	10	4	6	3	2	10	2	139
13	"	"	45	32,297	32,541	4,284	69,122	90	2	11	4	5	2	2	6	1	121
14	"	"	80	20,620	20,170	11,309	52,099	62	3	4	2	3	2	2	4	1	83
15	"	"	.....	.....	79	4,488	4,967	40	.....	.....	.....	.....	.....	.....	.....	.....	40
16	Strip pit.	Horse	.....	4,055	17,135	21,170	5	5	.....	.....	.....	.....	.....	.....	.....	.....	55
17	"	"	.....	60,561	59,375	5,586	125,522	150	2	12	2	3	2	2	4	1	176
18	Shaft.	Steam	60	2,136	2,021	4,157	50	50	.....	2	2	2	2	2	2	1	62
19	"	"	60	5,254	2,166	4,907	12,327	40	.....	3	1	1	1	1	1	1	49
20	"	"	35	5,741	3,308	5,591	14,640	40	.....	3	1	1	1	1	1	1	48
21	"	"	35	.....	.....	6,600	14	14	.....	2	.....	1	1	1	.....	.....	19
22	"	Horse	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
23	"	Steam	55	19,415	19,416	12,943	51,774	55	.....	5	2	2	2	2	2	1	73
24	"	"	40	19,415	19,416	13,614	51,774	55	.....	5	2	2	2	2	2	1	73
25	"	"	60	26,356	24,570	13,614	51,774	55	.....	6	2	3	2	2	3	1	94
26	"	"	60	.....	.....	4,500	5,099	75	.....	6	2	2	2	2	3	1	94
27	"	"	12	.....	.....	4,500	5,099	75	.....	3	.....	2	1	1	1	1	18
28	Drift.	Horse	.....	.....	.....	1,648	1,648	10	.....	2	.....	1	.....	1	.....	.....	15
29	Strip pit.	.....	.....	.....	.....	1,200	1,200	4	.....	.....	.....	.....	.....	.....	.....	.....	.....
30	Shaft.	Steam	20	.....	.....	880	880	8	.....	.....	.....	1	1	1	.....	.....	11
31	"	"	.....	.....	.....	120,036	120,036	160	5	10	2	5	3	3	5	2	195
32	"	Horse	.....	.....	.....	6,000	6,000	7	.....	2	1	1	.....	.....	.....	.....	15
33	"	Steam	60	11,510	10,208	379	22,127	60	3	5	2	2	2	3	4	1	82
34	"	"	.....	.....	.....	13,000	13,000	100	.....	.....	.....	.....	.....	.....	.....	.....	100
							1,989,157	2,503	39								3,036

CRAWFORD COUNTY COAL-MINES—CONCLUDED.

Office No....	Number of kegs of powder mine used during the year.....	Number of days mine worked....	Average price paid for mining.		Estimated value of fixtures.....	Estimated value of mine.....	Casualties.		Average selling price of coal at mine.				Average wages paid day men above ground...	Average wages paid day men under ground...	Size and depth of shaft, in feet.....	Remarks.
			Lump...	Mine run...			Killed..	Injured..	Lump...	Nut.....	Slack...	Mine run....				
1	16,900	269	\$0 92 $\frac{1}{4}$	\$0 55	\$15,000 00	\$10,000 00	1		\$1 50	\$1 25	\$0 40	\$1 25	\$1 50	\$2 00	7x15-97	New mine.
2	12,650	290	92 $\frac{1}{4}$	55	20,000 00	50,000 00	4	.....	1 50	1 25	40	1 25	1 50	2 00	9x24-90	
3	100	.....	.....	.....	.....	50,000 00	.....	.....	1 50	1 25	40	1 25	1 50	2 00	7x16-78	
4	10	.....	.....	.....	6,890 00	.....	.....	.....	1 40	1 25	40	1 25	1 50	2 00	6x10-86	
5	1,640	266	92 $\frac{1}{4}$	55		12,987 75			1 40	1 25	40	98.48	1 50	2 00	7x11-110	New mine.
6	3,274	151	92 $\frac{1}{4}$	55	.....	19,793 95	3	.....	1 40	1 25	40	98.50	1 75	2 12 $\frac{1}{2}$	7x14-72	
7	5,998	200	92 $\frac{1}{4}$	55	.....	20,895 21	.....	.....	1 40	1 25	40	98.50	1 75	2 12 $\frac{1}{2}$	6x14-86	
8	7,818	208	92 $\frac{1}{4}$	55	.....	33,471 25	1	.....	1 40	1 25	40	99	1 75	2 12 $\frac{1}{2}$	8x13-65	
9	7,685	178	92 $\frac{1}{4}$	55			3		1 40	1 25	40		1 54	1 92	8x16-60	Abandoned Sept. 1, 1898.
10	1,931	114	92 $\frac{1}{4}$	55	.....	.....	1	.....	1 25	1 00	40	95	1 50	1 90	8x16-60	
11	5,014	216	92 $\frac{1}{4}$	55	5,000 00	5,000 00	1	8	.....	.....	.....	.....	.....	.....	.....	
12	.....	.....	.....	.....	3,000 00	5,000 00	.....	.....	1 25	1 00	30	90	1 50	2 00	6x12-32	
13	3,832	200	92 $\frac{1}{4}$	55	8,000 00	2,500 00			1 25	1 00	30	90	1 50	2 00	12x16-20	New mine. Price per box, 19 and 20 cts. Price per box, 20 and 24 cts.
14	3,680	190	92 $\frac{1}{4}$	55	7,500 00	1,800 00	1	.....	1 25	1 00	30	90	1 50	2 00	7x12-72	
15	2,679	181	92 $\frac{1}{4}$	55	7,000 00	18,500 00	1	.....	1 35	1 05	35	1 00	1 25	*2 25	.....	
16	130	.....	.....	.....	.....	.....	.....	.....	1 35	1 05	35	1 00	1 50	*2 25	.....	
17	475	200	92 $\frac{1}{4}$	55	10,000 00	35,000 00	1		1 35	1 05	35	1 00	1 50	2 00	8x14-65	New mine. Price per box, 19 and 20 cts. Price per box, 20 and 24 cts.
18	7,702	208	92 $\frac{1}{4}$	55	6,000 00	15,000 00	.....	.....	1 35	1 05	35	1 00	1 50	2 00	7x12-40	
19	231	25	92 $\frac{1}{4}$	55	2,000 00	30,000 00	1	.....	1 50	1 25	60	1 25	1 40	1 75	6x12-101	
20	823	150	92 $\frac{1}{4}$	55	2,000 00	4,000 00	.....	.....	1 35	1 00	50	1 10	1 50	2 00	6x12-34	
21	200	160	92 $\frac{1}{4}$	55	1,000 00	9,000 00			1 35	1 25	50	1 25	1 50	2 00	6x12-34	New mine.
22	225	40	92 $\frac{1}{4}$	55	2,000 00	20,000 00	.....	.....	1 35	1 25	50	1 25	1 50	2 00	7x12-164	
23	.....	.....	.....	.....	4,000 00	30,000 00	.....	.....	1 35	1 00	50	1 10	1 50	2 00	7x14-50	
24	1,400	234	92 $\frac{1}{4}$	55	2,000 00	20,000 00	.....	.....	1 35	1 00	50	1 10	1 50	2 00	8x16-54	
25	923	230	92 $\frac{1}{4}$	55	1,000 00	5,000 00			1 25	90	30	1 00	1 50	2 00	6x16-75	New mine.
26	2,311	208 $\frac{1}{2}$	92 $\frac{1}{4}$	55	1,000 00	5,000 00	.....	.....	1 25	90	40	1 00	1 75	2 00	.....	
27	200	200	92 $\frac{1}{4}$	55	1,000 00	2,000 00	.....	.....	1 25	1 00	50	1 25	1 50	*2 25	.....	
28	95	.....	.....	.....	100 00	10,000 00	.....	.....	1 25	1 00	50	1 25	1 50	2 00	6x12-112	
29	2				500 00	3,500 00			1 25	1 00	50	1 25	1 50	2 00	7x16-79	New mine.
30	51	60	92 $\frac{1}{4}$	55	5,000 00	15,000 00	.....	.....	1 35	1 05	40	1 00	1 75	2 00	6x12-40	
31	6,935	223 $\frac{1}{2}$	92 $\frac{1}{4}$	55	5,000 00	1,000 00	.....	.....	1 35	1 05	40	1 00	2 00	2 00	7x15-46	
32	30	250	92 $\frac{1}{4}$	55	500 00	30,000 00	.....	.....	1 25	1 08	45	1 00	1 50	*2 50	.....	
33	1,347	169	92 $\frac{1}{4}$	55					1 25	1 08	45	1 00	1 50	2 00		New mine.
34	20	.....	.....	.....	.....	30,000 00	.....	.....	1 25	1 08	45	1 00	1 50	*2 50	.....	
	82,051	4,821					8	19								

* For man and team.

TABLE OF FATAL AND NON-FATAL ACCIDENTS, AND COAL PRODUCTION, FROM 1880 TO DECEMBER 31, 1898.

Office No	Year ending.	Casualties.		Number of annual report.	Names of different Mine Inspectors.	Total tons produced (short tons).	Total value of coal at the mine.	Average price per ton at mine	Average number of days worked	Average number of men employed	Number of tons produced for each fatal and non-fatal accident.		Total number of casualties.
		Killed	Injured								Killed.	Injured.	
1	1880 ¹					550,000	\$715,040 00	\$1 30					
2	1881 ¹					750,000	1,012,300 00	1 35					
3	1882 ¹					750,000	975,000 00	1 30					
4	1883 ¹					900,000	1,152,000 00	1 28					
5	1884 ¹	3	7	First	E. A. Scammon	1,100,000	1,375,000 00	1 25			366,666	157,142	10
6	1885 ²	9	20	Second	John R. Braidwood	1,440,057	1,770,270 00	1 23		4,175	160,006	72,002	29
7	1886 ²					1,350,000	1,620,000 00	1 20					
8	1887 ²	7	22	Third	G. W. Findley	1,570,079	2,198,110 00	1 40			224,297	71,367	29
9	1888 ² *				J. T. Stewart	1,700,000	2,550,000 00						
10	1889 ²	12	4	Fourth	J. T. Stewart	2,112,166	3,126,005 00	1 48		5,956	176,013	528,041	16
11	1890 ²	8	20			2,516,054	3,170,870 00	1 30	2 10	4,523	314,506	125,802	28
12	1891 ²	13	35	Fifth		2,753,722	3,607,375 00	1 31	2 22	6,201	211,824	78,678	48
13	1892 ³					3,007,276	3,954,568 00	1 31½	2 08	6,579			
14	1893	15	61	Sixth	A. C. Gallagher	2,881,931	3,960,331 00	1 37½	1 47	9,891	192,128	47,244½	76
15	1894	25	53	Seventh	A. C. Gallagher	3,611,214	4,899,774 00	1 35½	1 61	10,088	138,893	68,136	79
16	1895	10	42	Eighth	Bennett Brown	3,190,843	3,590,141 00	1 12½	1 70	9,021	319,084	75,973	52
17	1896	12	25	Ninth	Bennett Brown	3,191,748	3,527,357 00	1 01½	1 70	8,807	265,979	127,669	37
18	1897	6	30	Tenth	Geo. T. McGrath	3,291,806	3,527,582 42	1 07	1 52½	8,669	519,467¾	109,863½	36
19	1898	17	34	Eleventh	Geo. T. McGrath	3,860,405½	4,825,507 37	1 25	1 70¾	8,122	227,094	113,544½	51

1. Production of coal and average price per ton made from U. S. geological survey, from 1880 to 1884.

2. One report made for two years.

3. No report made. Statistics for that year taken from U. S. geological survey.

* Explosion at mine No. 2 at Frontenac. No record made of loss of life, but forty-four lives were lost.

The average number of days worked for 1898 is taken from the four largest coal-producing counties in the state. The reason for this low average may be attributed to mines that load nothing but commercial coal, reducing the number of days worked by mines that load railroad coal.

SPECIAL REPORT
ON
THE PENITENTIARY COAL-MINE,
AT LANSING.

Kindly furnished by H. S. Landis, warden, and John Gray, mine superintendent.

NOTES FROM OFFICIAL REPORTS.

Commenced to sink the main shaft at the Kansas State Penitentiary, at Lansing, Kan., November 25, 1879. The size of the main shaft is 10x16 feet, which is divided into two parts—one 12x10 feet, leaving 4x10 feet for upcast or return air-course.

Completed main shaft and reached coal twenty-two inches thick, at a depth of 713 feet 9 inches, January 18, 1881.

Commenced mining coal March 1, 1881. In actual operation July 1, 1881.

They were working 382 days in sinking 713 feet 9 inches, averaging 1.91 feet per day, with an average of $34\frac{3}{8}$ men per day, making a total of 13,018 days.

Commenced sinking air-shaft July 1, 1882, located 210 feet southeast from the main shaft, and completed same February 21, 1884, at a depth of 732 feet; size, 8x14 feet; total days' work for one man on air-shaft, 5608 days.

The mine is worked "long wall," removing the coal and packing the space with the slate taken down in the roads.

The pit is working well, settling down evenly, and giving very little trouble from gas.

During the sinking of the two shafts there was only one accident—a plumb-bob fell, striking a man at work in the air-shaft on the head, causing his death.

Approximate cost of two shafts and opening mine, \$76,064.47.

Area of land mined to date, July 1, 1898, 318 acres.

Approximate number of bushels per acre, 70,000.

Actual number of bushels mined per acre, 73,462.

REPORT OF MINE SUPERINTENDENT.

I herewith submit a report of work done at the mine during the two fiscal years ending June 30, 1897, and June 30, 1898.

In February, 1897, I assumed the duties and responsibilities of mine superintendent, and have ever since endeavored to look after the interests of the state and the health and safety of those under my jurisdiction to the best of my ability.

Whatever of success I may have attained in this regard is due in a large measure to Warden Landis and Deputy Warden Gable, who have always responded willingly to any request that was made for the good of this department. I am also indebted to Pit Boss Casselman, and each and every mine officer, for the faithful discharge of the duties incumbent upon them in their respective positions.

During the year ending June 30, 1897, there were mined 1,313,372 bushels; during the year ending June 30, 1898, there were mined 1,508,655 bushels; making a total for the two fiscal years of 2,822,027 bushels.

The total amount of coal mined to date is 23,361,067 bushels, exhausting the coal from under 317 $\frac{3}{10}$ acres.

During the fiscal year ending June 30, 1897, there were employed at the coal-mine an average of 292 $\frac{1}{2}$ men per day, working 309 days. During the fiscal year ending June 30, 1898, there were employed at the coal-mine an average of 313 $\frac{1}{10}$ men per day, working 310 days.

The average quantity of coal produced per day by each man in pit was 17 $\frac{3}{10}$ bushels. The average quantity of coal produced per day by each man for the total number of men employed was 15 $\frac{3}{10}$ bushels.

All buildings, machinery and mine are in good repair and working order, except the main shaft, which I recommend to be retimbered, and the roofs of main shaft, air-shaft and coal-house to be repaired. With the northeast air-course completed, and the northwest air-course under construction, the mine will be one of the best ventilated in the state.

On the northeast air-course, extending and widening same, from June 30, 1896, to June 30, 1897, there were performed 1200 days' labor. Widening and timbering main north entry, from three to four and from ten to fourteen entries, 650 days. Labor performed on laying tracks, straightening entries, and general repairs, from June 30, 1896, to June 30, 1897, 5425 days.

RECAPITULATION.		<i>Days.</i>	<i>Rate.</i>	<i>Amount.</i>
Labor performed on air-courses		1,200	\$0 50	\$600 00
“ “ timbering entries		650	50	325 00
“ “ general improvements		5,425	50	2,712 50
Total amounts.....		7,275	.....	\$3,637 50

Extending and widening the northwest air-course, which is the new one under construction, from July 1, 1897, to July 1, 1898, 1320 days: on the northeast air-course, from July 1, 1897, to July 1, 1898, 670 days. Extending and widening the west air-course, from July 1, 1897, to July 1, 1898, 525 days. Widening and timbering main north entry, from three to four and from ten to fourteen entries, from July 1, 1897, to July 1, 1898, 1550 days. Labor performed laying tracks and straightening entries and general repairs, from July 1, 1897, to July 1, 1898, 10,025 days.

RECAPITULATION.		<i>Days.</i>	<i>Rate.</i>	<i>Amount.</i>
Labor performed on air-courses		2,520	\$0 50	\$1,260 00
“ “ timbering entries		2,100	50	1,050 00
“ “ general improvements		10,025	50	5,012 50
Total amounts.....		14,645	.....	\$7,322 50

Number of men employed at the coal-mine and bushels mined for the fiscal year ending June 30, 1897.

DATE.	Days worked.	Men in pit.	Men on top.	Total men.	Bushels mined.
1896—July.....	26	5,838	1,378	7,216	43,638
August.....	26	5,628	1,401	7,029	47,667
September.....	25	4,679	1,251	5,930	85,078
October.....	27	4,995	1,412	6,407	100,250
November.....	24	5,315	1,148	6,463	110,796
December.....	26	7,646	1,360	9,006	170,840
1897—January.....	26	7,786	1,364	9,150	163,972
February.....	24	6,908	1,240	8,148	130,708
March.....	27	7,030	1,383	8,413	162,027
April.....	26	6,077	1,245	7,322	119,706
May.....	26	6,118	1,252	7,370	96,694
June.....	26	6,628	1,211	7,839	81,996
Totals.....	309	74,648	15,645	90,293	1,313,372

An average of 292 $\frac{1}{2}$ men per day at work in mine.

Number of men employed at the coal-mine and bushels mined for the fiscal year ending
June 30, 1898.

DATE.	Days worked.	Men in pit.	Men on top.	Total men.	Bushels mined.
1897—July.....	26	6,852	1,219	8,071	126,796
August.....	26	6,556	1,219	7,775	127,352
September.....	26	6,121	1,137	7,258	141,909
October.....	26	6,515	1,169	7,684	128,000
November.....	25	7,091	1,137	8,228	147,037
December.....	26	8,278	1,195	9,473	177,791
1898—January.....	26	8,377	1,125	9,599	175,129
February.....	24	7,442	1,114	8,556	148,411
March.....	27	7,871	1,264	9,135	129,460
April.....	26	6,309	1,166	7,475	87,618
May.....	26	5,635	1,127	6,762	69,735
June.....	26	5,926	1,113	7,039	49,417
Totals.....	310	82,993	14,082	97,055	1,508,655

An average of 313 $\frac{1}{10}$ men per day at work in mine.

TABLE showing total amount of coal mined in seventeen years, to June 30, 1898.

YEAR.	Men.	Bushels.	Average per man.
1882.....	31,930	584,304	18.26 bus.
1883.....	35,437	727,069	20.51 "
1884.....	44,080	876,790	19.89 "
1885.....	60,478	1,058,829	17.50 "
1886.....	71,906	1,251,568	17.40 "
1887.....	93,165	1,442,735	15.48 "
1888.....	100,000	1,971,600	19.65 "
1889.....	90,378	1,733,911	19.18 "
1890.....	88,901	1,692,320	18.81 "
1891.....	94,571	1,820,577	19.25 "
1892.....	84,614	1,529,834	18.08 "
1893.....	85,731	1,475,419	17.30 "
1894.....	94,074	1,628,046	17.30 "
1895.....	102,456	1,426,703	14.00 "
1896.....	100,102	1,339,335	13.37 "
1897.....	90,293	1,313,372	14.53 "
1898.....	97,055	1,508,655	15.54 "
Total bushels mined to date		23,361,067	

STATEMENT showing expenditures by mine of appropriation items 34 to 51, inclusive.

No.	ACCOUNT.	Annual appropria- tion.	Expended by mine.	Annual appropria- tion asked for.
34	Mine lumber.....	\$1,500 00	\$861 19	\$1,500 00
35	Iron and steel.....	600 00	290 34	400 00
36	Coal picks and tools.....	400 00	109 75	300 00
37	Railroad iron.....	500 00		300 00
38	Nails and spikes.....	100 00	188 89	150 00
39	Wire ropes.....	350 00	288 50	300 00
40	Nuts, rivets, and bolts.....	100 00	34 00	100 00
41	Powder, fuse, and caps.....	200 00	218 00	250 00
42	Lamp-wicks.....	100 00	70 00	100 00
43	Miners' lamps.....	100 00	100 15	100 00
44	Pick handles.....	100 00	98 00	100 00
45	Miners' shovels.....	100 00	128 05	125 00
46	Machine oil, miners' oil, and car grease.....	2,000 00	2,583 68	2,500 00
47	Car wheels and boxes.....	100 00		100 00
48	Fire-bricks.....	50 00		50 00
49	Repairs for fan.....	300 00	3 00	250 00
50	Repairs for engine and boiler.....	300 00	88 94	300 00
51	Repairs for pumps.....	300 00	36 88	300 00
Totals.....		\$7,200 00	\$5,094 37	\$7,225 00

In addition to the above, \$149.49 was expended on boilers at the mine.

In regard to the yearly output of the coal-mine, I desire to call your attention to the accompanying map, showing in detail the yearly capacity of the mine, and the yearly amount of coal consumed by state institutions as compared with former years.

The state institutions, from June 30, 1897, to June 30, 1898, have consumed a total amount of 1,143,516 bushels. This includes the penitentiary and coal sold to the wagon trade (local), amounting annually to 47,923 bushels.

The annual amount and increase of coal consumed by state institutions will reach this coming year to annual amount of about 1,500,000 bushels, which is nearly as much as the present capacity of the mine.

Also would recommend to have the main entries provided with double track and lined with brick, making a more durable and stronger construction than the present timbering.

The brick walls being smooth and without any projections would increase the ventilation to a considerable extent.

JOHN GRAY, *Superintendent of Mine.*

TABLE showing the number of bushels of penitentiary coal used at various places from July 1, 1890, to December 31, 1892.

MONTHS.	State institutions.	Penitentiary.	Contractors.	Cash orders.	Total.
1890—July.....	2,603	16,275	114,005	3,995	136,878
August.....	7,340	15,462	122,554	6,006	151,362
September.....	13,110	19,754	129,290	5,609	167,763
October.....	22,435	25,896	112,816	6,819	167,966
November.....	44,185	30,353	72,217	6,518	153,273
December.....	59,819	39,228	73,485	4,759	177,291
Six months.....	149,492	146,968	624,367	33,706	954,533
1891—January.....	55,832	40,931	83,743	2,746	183,252
February.....	23,054	38,791	71,166	38,630	171,641
March.....	32,697	39,354	96,207	20,166	188,424
April.....	35,073	29,166	98,757	3,392	166,388
May.....	18,864	24,261	69,510	5,879	118,514
June.....	2,233	18,399	11,138	6,065	37,825
Six months.....	167,753	190,892	430,521	76,878	866,044
1891—July.....	3,782	17,972	39,843	6,594	68,191
August.....	13,849	19,408	72,699	9,448	115,404
September.....	27,212	19,153	73,768	7,718	127,851
October.....	27,697	29,966	86,199	10,827	154,689
November.....	19,476	32,635	85,049	8,958	146,118
December.....	27,255	39,564	77,025	10,927	154,771
Six months.....	119,271	158,698	434,583	54,472	767,024
1892—January.....	41,438	42,916	62,346	13,043	159,743
February.....	62,571	37,301	49,845	7,167	156,884
March.....	21,899	38,933	70,503	11,781	143,116
April.....	9,510	27,701	57,152	10,116	104,479
May.....	21,080	21,071	52,616	11,020	105,787
June.....	29,379	18,679	33,158	11,585	92,801
Six months.....	185,877	186,601	325,620	64,712	762,810
1892—July.....	8,072	17,991	45,751	10,341	82,155
August.....	3,427	18,077	78,804	17,049	117,357
September.....	25,526	17,964	88,758	15,463	147,711
October.....	35,739	22,166	77,823	6,979	142,707
November.....	19,608	32,241	70,060	5,716	127,625
December.....	50,098	38,780	55,384	4,748	149,010
Six months.....	142,470	147,219	416,580	60,296	766,565

TABLE showing the number of bushels of penitentiary coal used at various places from January 1, 1893, to December 31, 1896.

MONTHS.	State institutions.	Peni- tentiary.	Con- tractors.	Cash orders.	Total.
1893—January.....	50,544	44,643	51,901	6,205	153,293
February.....	52,929	38,792	46,351	4,161	142,233
March.....	49,710	36,852	52,239	4,268	143,069
April.....	14,074	22,072	36,999	8,574	81,719
May.....	11,070	22,175	49,943	8,541	91,729
June.....	7,631	18,078	62,408	8,694	96,811
Six months.....	185,958	182,612	299,841	40,443	708,854
1893—July.....	88,258	17,789	64,753	9,302	100,112
August.....	24,057	18,728	81,271	8,950	133,066
September.....	29,891	22,329	72,542	3,506	128,268
October.....	43,061	26,247	72,136	8,313	149,757
November.....	55,042	36,506	62,564	5,691	159,803
December.....	53,810	43,673	42,835	3,930	144,248
Six months.....	214,119	165,272	396,101	39,702	815,194
1894—January.....	78,876	42,611	78,312	3,331	203,130
February.....	54,795	41,382	62,850	2,268	161,295
March.....	16,020	31,707	73,876	1,193	122,796
April.....	9,947	26,242	66,271	260	102,720
May.....	4,986	21,375	90,099	437	116,897
June.....	2,922	18,521	84,145	426	106,014
Six months.....	167,546	181,838	455,553	7,915	812,852
1894—July.....	4,007	17,162	44,592	1,831	67,592
August.....	22,151	16,778	62,088	3,126	104,143
September.....	26,786	19,656	69,295	1,460	117,197
October.....	33,632	26,397	74,049	3,672	137,750
November.....	46,761	38,772	60,949	4,699	150,581
December.....	79,985	37,834	35,984	4,016	157,819
Six months.....	212,722	156,599	346,957	18,804	735,082
1895—January.....	92,256	49,988	30,176	11,271	183,691
February.....	101,758	44,435	29,017	4,513	179,723
March.....	42,281	35,922	44,591	2,391	125,185
April.....	3,534	23,587	53,091	700	81,212
May.....	5,284	19,900	45,544	387	71,115
June.....	3,245	21,687	29,267	383	54,582
Six months.....	248,358	195,819	231,686	19,645	695,508
1895—July.....	4,014	19,831	49,226	774	73,842
August.....	36,982	21,907	57,200	1,504	117,593
September.....	46,159	22,722	63,357	1,414	133,652
October.....	37,611	43,572	106,040	5,173	192,396
November.....	62,136	44,126	53,688	5,133	165,083
December.....	87,047	45,303	35,330	5,880	173,560
Six months.....	273,949	197,461	364,841	19,881	356,132
1896—January.....	94,299	49,863	22,766	5,136	172,064
February.....	37,401	44,381	9,031	3,752	94,565
March.....	38,010	38,865	6,155	3,446	86,486
April.....	36,074	23,980	5,261	1,260	66,575
May.....	12,262	21,456	523	524	34,765
June.....	4,783	22,688	1,720	709	29,900
Six months.....	222,839	201,233	45,456	14,827	484,355
1896—July.....	18,474	20,854	1,692	1,563	43,616
August.....	19,093	20,938	2,308	4,425	47,672
September.....	43,542	29,249	.....	9,822	34,474
October.....	57,672	33,398	.....	6,960	100,485
November.....	57,905	35,541	6,584	6,888	109,904
December.....	109,195	43,701	7,054	8,142	170,907
Six months.....	305,881	183,681	17,638	37,800	557,058

INSPECTOR OF COAL-MINES.

TABLE showing the number of bushels of penitentiary coal used at various places from January 1, 1897, to June 30, 1898.

MONTHS.	State institutions.	Penitentiary.	Contractors.	Cash orders.	Total.
1897—January.....	98,086	42,479	15,463	6,064	165,205
February.....	59,721	40,700	22,734	5,861	131,079
March.....	76,185	38,084	41,464	3,681	162,652
April.....	34,791	29,653	50,837	1,864	119,627
May.....	26,892	21,469	46,501	880	96,305
June.....	11,545	21,958	47,197	670	81,975
Six months.....	307,220	194,343	224,196	19,040	756,843
1897—July.....	20,321	22,511	81,523	1,563	126,665
August.....	14,549	26,136	82,501	4,425	127,575
September.....	32,125	26,694	79,597	9,822	141,661
October.....	43,855	31,935	45,222	6,960	127,681
November.....	63,023	46,348	24,319	6,880	147,257
December.....	114,897	55,450	375	8,142	176,693
Six months.....	286,770	209,074	313,537	37,792	847,532
1898—January.....	110,683	52,340	1,450	6,064	175,428
February.....	86,336	47,325	7,465	5,861	148,306
March.....	66,725	48,372	8,390	3,681	129,204
April.....	39,922	39,886	4,645	1,864	87,598
May.....	34,396	29,755	3,927	880	69,983
June.....	21,321	22,619	4,263	670	49,360
Six months.....	359,383	240,297	30,140	19,020	659,879

TABLE showing the number of bushels of penitentiary coal used at various places from July 1, 1896, to July 1, 1898.

MONTHS.	Cash orders.	State orders.	Penitentiary.	Coke oven.	State institutions.	Contractors.	Total.
1896—July.....	1,585	1,033	20,237	617	18,474	1,692	43,638
August.....	4,420	908	20,321	617	19,093	2,308	47,667
September.....	9,985	1,861	28,799	450	43,542	441	85,078
October.....	6,725	2,455	32,890	508	57,672	.....	100,250
November.....	7,780	2,986	35,129	412	57,905	6,584	110,796
December.....	8,075	2,815	43,078	623	109,195	7,054	170,840
1897—January.....	4,831	3,113	42,101	378	98,086	15,463	163,972
February.....	5,184	2,369	40,115	585	59,721	22,734	130,708
March.....	3,871	2,423	37,472	612	76,185	41,464	162,027
April.....	1,874	2,551	29,266	387	34,791	50,837	119,706
May.....	895	937	20,982	487	26,892	46,501	96,694
June.....	670	629	21,390	568	11,545	47,196	81,996
Totals.....	55,895	24,078	371,780	6,244	613,101	242,274	1,313,372
1897—July.....	1,594	847	21,749	762	20,321	81,523	126,796
August.....	3,454	645	25,822	381	14,549	82,501	127,352
September.....	2,133	1,360	26,051	643	32,125	79,597	141,909
October.....	5,522½	1,467	31,141	794	43,855	45,222	128,001½
November.....	9,534½	3,812½	45,742	606	63,023	24,319	147,037
December.....	6,192½	2,877	55,450	.....	112,897	375	177,791
1898—January.....	7,456	3,198	52,340	.....	110,683	1,450	175,127
February.....	4,847½	2,438	47,325	.....	86,336	7,465	148,411½
March.....	3,702	2,270	48,373	.....	66,724	8,390	129,460
April.....	1,785	1,380	39,101½	785	39,922	4,645	87,618
May.....	931	725½	29,055	700	34,396	3,927	69,735
June.....	770½	441	22,119	500	21,323½	4,263	40,417
Totals.....	47,923½	21,461	444,268½	5,171	646,154½	343,677	1,508,655½

TABLE showing the number of bushels of coal shipped from the penitentiary mines to various state institutions from July 1, 1896, to July 1, 1898.

MONTHS.	Agricultural college	Blind asylum.	Deaf and dumb asylum	Osawatomie insane asylum	Topeka insane asylum	Idiotic and imbecile asylum	Reformatory.	Reform school	Soldiers' home	State university	Soldiers' orphans' home	State normal school	State-house ..	Industrial school
1896—July							1,575	1,065	1,127	1,961		600		632
August			530	14,707	4,589	1,108		2,868	3,299	4,952	1,678	1,214		2,217
September		4,058	5,560	3,618	13,324	522		3,435	3,259	3,721	1,678	1,214		2,672
October			4,836	17,081	10,356	1,669	530	4,588	4,073	4,721	3,592	1,876	2,097	1,740
November		3,105	3,942	17,785	11,723	2,283		1,749	2,429	4,462	8,422	2,855	4,194	4,454
December		3,279	5,013	32,973	21,506	4,655		5,772	4,587	8,016	8,422	2,855	6,226	4,656
1897—January		3,821	7,388	6,437	26,260		543	7,664	5,581	9,658	4,255	4,028	5,404	4,656
February		3,008	4,682	3,978	14,941	3,236		2,278	2,068	7,283	1,912	1,129	9,088	1,965
March		2,905	8,925	13,269	12,894	2,033		3,768	2,811	7,266	3,743	1,662	11,302	3,053
April			3,539	15,677	3,997	1,325		3,576	3,137	2,556	1,449	1,093		3,581
May		775	2,141	11,789		600	612	2,174	2,211	550	1,137			1,051
June				4,835				2,505						1,636
Totals	31,399	20,951	46,556	146,312	119,590	17,431	3,260	40,322	31,323	48,245	30,711	14,455	38,311	23,679
1897—July														
August				12,050	3,873	1,012			550	1,467	1,095			1,306
September		1,087		3,448	3,011	1,612	650		625	1,818	1,074		550	1,737
October		488	513	12,310	7,389			1,137	1,206	2,913	2,719			1,219
November		2,058	1,106	10,197	12,816	2,104	475	2,414	3,951	3,857	3,365	548	1,850	1,570
December		3,020	5,415	11,409	12,077	2,645	919	3,563	3,320	3,938	5,508	2,994	3,876	2,425
1898—January		3,914	9,463	19,760	17,260	3,983	3,801	7,214	5,087	7,245	9,271	3,187	10,168	5,777
February		6,077	8,408	21,229	23,312	2,595	4,271	3,750	6,621	9,298	7,425	3,163	9,421	1,944
March		6,695	5,414	22,108	18,752		2,920	7,390	4,970	7,516	4,326	1,475	569	2,532
April		3,793	6,808	10,629	18,762	1,713	5,316	4,326	3,814	5,844	5,653	2,538	3,383	1,538
May		2,144	3,251	10,057	4,746	2,525	963	2,263	2,188	2,194	5,928	1,056	981	1,238
June			1,175	10,893	6,376	2,289	4,300	2,951	1,738		1,001			2,475
Totals	32,248	18,322	43,009	151,499	124,472	20,538	23,645	37,190	35,590	45,090	45,824	14,961	30,798	23,161

Total amount shipped from July 1, 1896, to June 30, 1897, 613,101 bushels; from July 1, 1897, to June 30, 1898, 646,154 bushels; grand total, 1,259,255 bushels.

INSPECTOR OF COAL-MINES.

TABLE of expenses to mine one ton of coal, from June 30, 1897, to June 30, 1898.

Number of men employed in mine department.....	97,055	
Number of tons of coal produced.....	60,346 ₁₀	
At 55 cents per day for each man.....	Aggregate.....	\$0 88 ⁴⁵ / ₁₀₀ per ton.
Officers in mine department.....	"	25 ⁰⁰ / ₁₀₀ "
Material for mine department.....	"	08 ⁴⁵ / ₁₀₀ "
Royalty on coal mined.....	"	05 "
Interest on plant, valued at \$100,000, at six per cent.....	"	09 ⁰⁴ / ₁₀₀ "
Total expenses per ton, aggregate.....		\$1 38 ⁰⁶ / ₁₀₀ per ton.

ESTIMATE of price per ton of coal to obtain the actual cost of production as per above table.

Lump.....	66 per cent.	At \$1 60 per ton.....	\$1 05 ⁰⁶ / ₁₀₀
Grate.....	10 "	At 1 50 "	15 "
Nut.....	7 "	At 1 20 "	08 ⁴⁵ / ₁₀₀
Pea.....	8 "	At 75 "	06 "
Dust.....	9 "	At 40 "	03 ⁰⁶ / ₁₀₀
Total.....	100 per cent.	Aggregate per ton.....	\$1 38 ⁰⁶ / ₁₀₀

COAL SOLD from June 30, 1897, to June 30, 1898.

Customers.....	343,677 bus.	\$13,567 14
Wagon trade.....	47,362 "	3,298 21
Penitentiary and state institutions.....	1,116,372 "	78,146 04
Total amount.....	1,507,411 bus.	\$95,011 39

TOTAL EXPENSES of mining coal from June 30, 1897, to June 30, 1898.

Salaries of mine officers.....	\$15,226 43
Supplies and material.....	5,094 37
Six per cent. interest on \$100,000 plant.....	6,000 00
Royalty on coal mined.....	3,017 30
Total amount.....	\$29,338 10
97,055 days' convict labor at 67 ¹⁵ / ₁₀₀ cents per day.....	65,673 29
Grand total.....	\$95,011 39

MONTHLY REPORT FOR JANUARY, 1898.

	Lump.	Grate.	Nut.	Pea.	Dust.	Mine run.	Total.
Weight on cars.....	85,890	19,779	1,089%	1,089%	1,089%	3,195	112,133
Weight on wagons.....	18,787		3,538	3,357	3,087		28,769
Mule track.....			7,795	7,795	7,795	9,840	33,225
Cap house.....						1,000	1,000
Totals.....	104,677	19,779	12,422%	11,971%	11,971%	14,035	175,127
Percentages.....	64.9	12.2	7.7	7.5	7.5	7.4	

How disposed of:

To state institutions.....	110,683 bushels.
To penitentiary.....	50,524 "
To cash orders.....	7,456 "
To state orders.....	3,198 "
To Helmers Manufacturing Company.....	1,816 }
To H. W. Klemp.....	1,450 }
Total.....	175,127 bushels.

Remarks:

Number of days worked.....	26
Average for total number of men.....	18.24 bushels.
Average for total number of men in pit.....	20.90 "
Average for total number of men at face.....	25.41 "
Average of total number of men per day.....	368 ³¹ / ₁₀₀ men.
Amount of coal produced.....	175,127 bushels.
Amount of coal produced per day.....	6,735 ¹⁷ / ₁₀₀ "
Average per pit-car..... per day.....	11.42 "

MONTHLY REPORT FOR FEBRUARY, 1898.

	Lump.	Grate.	Nut.	Pea.	Dust.	Mine run.	Total.
Weight on cars.....	74,972	16,384	425	1,010	1,010	.....	93,801
Weight on wagons.....	17,183½	.....	2,265	2,521	2,630	.....	24,599½
Mule track.....	.....	.....	7,476%	7,476%	7,476%	6,500	28,930
Cap house.....	.....	.....	.....	.....	.....	1,081	1,081
Totals.....	92,155½	16,384	10,166%	11,007%	11,116%	7,581	148,411½
Percentages.....	65.4	11.6	6.8	7.4	7.5	.....	.....

How disposed of:

To state institutions.....	86,336 bushels.
To penitentiary.....	46,102 "
To cash orders.....	4,847½ "
To state orders.....	2,438 "
To Helmers Manufacturing Company.....	1,223 }
To customers.....	7,465 }
Total.....	148,411½ bushels.

Remarks:

Number of days worked.....	24
Average for total number of men.....	17.33 bushels.
Average for total number of men in pit.....	19.94 "
Average for total number of men at face.....	24.90 "
Average of total number of men per day.....	356½ men.
Amount of coal produced.....	148,411½ bushels.
Amount of coal produced per day.....	6,183¼ "
Average per pit-car.....	11.39 "

MONTHLY REPORT FOR MARCH, 1898.

	Lump.	Grate.	Nut.	Pea.	Dust.	Mine run.	Total.
Weight on cars.....	58,246	13,011	738	1,322	1,322	475	75,114
Weight on wagons.....	16,421	.....	1,986½	1,963	2,643	.....	23,013½
Mule track.....	.....	.....	4,996½	4,996½	4,996½	15,712½	30,702½
Cap house.....	.....	.....	.....	.....	.....	630	630
Totals.....	74,667	13,011	7,721	8,281½	8,961½	16,817½	129,460
Percentages.....	66.2	11.5	6.8	7.4	7.9	.....	.....

How disposed of:

To state institutions.....	66,724 bushels.
To penitentiary.....	47,005 "
To cash orders.....	3,702½ "
To state orders.....	2,270½ "
To Helmers Manufacturing Company.....	1,368 }
To customers.....	8,390 }
Total.....	129,460 bushels.

Remarks:

Number of days worked.....	27
Average for total number of men.....	14½ bushels.
Average for total number of men in pit.....	16½ "
Average for total number of men at face.....	35 "
Average of total number of men per day.....	338% men.
Amount of coal produced.....	129,460 bushels.
Amount of coal produced per day.....	4,794¾ "
Average per pit-car.....	11½ "

INSPECTOR OF COAL-MINES.

MONTHLY REPORT FOR APRIL, 1898.

	Lump.	Grate.	Nut.	Pea.	Dust.	Mine run.	Total.
Weight on cars.....	35,361	7,753	425	907	906	.....	45,352
Weight on wagons.....	12,408	.....	1,692	1,815	2,394	.....	18,309
Mule track.....	.....	.....	3,844	3,844	3,844	12,125	23,657
Cap house.....	.....	.....	.....	.....	.....	300	300
Totals.....	47,769	7,753	5,761	6,566	7,144	12,425	87,618
Percentages.....	62.8	10.3	7.6	8.7	9.5	.....	.....

How disposed of:

To state institutions.....	39,922 bushels.
To penitentiary.....	37,920 "
To cash orders.....	1,785 "
To state orders.....	1,380 "
To coke-oven.....	785 "
To Helmers Manufacturing Company.....	1,181 }
To H. W. Klemp.....	1,813 }
To F. Whitrock.....	2,832 }
Total.....	87,618 bushels.

Remarks:

Number of days worked.....	26
Average for total number of men.....	12¾ bushels.
Average for total number of men in pit.....	18¾ "
Average for total number of men at face.....	25¾ "
Average of total number of men per day.....	262 men.
Amount of coal produced.....	87,618 bushels.
Amount of coal produced per day.....	3,369¾ "
Average per pit-car.....	12½ "

MONTHLY REPORT FOR MAY, 1898.

	Lump.	Grate.	Pea.	Dust.	Nut.	Mine run.	Total.
Weight on cars.....	30,364	6,345	682	682	450	500	39,023
Weight on wagons.....	10,562½	.....	1,242	1,779	1,171	.....	14,954½
Mule track.....	.....	.....	3,056%	3,056%	3,056%	6,787½	15,957½
Totals.....	40,926	6,345	4,980%	5,517%	4,677%	7,287½	69,735
Percentages.....	65.5	10.1	7.9	8.8	7.4	.....	.....

How disposed of:

To state institutions.....	34,396 bushels.
To penitentiary.....	28,357½ "
To cash orders.....	931 "
To state orders.....	725½ "
To coke-oven.....	700 "
To Helmers Manufacturing Company.....	698 "
To customers:	
H. R. Drett.....	400 }
H. W. Klemp.....	1,864 }
F. Whitrock.....	1,213 }
Ole Johnson.....	450 }
Total.....	69,735 bushels.

Remarks:

Number of days worked.....	26
Average for total number of men.....	10¾ bushels.
Average for total number of men in pit.....	12¾ "
Average for total number of men at face.....	23¾ "
Average of total number of men per day.....	260 men.
Amount of coal produced.....	69,735 bushels.
Amount of coal produced per day.....	2,682 "
Average per pit-car.....	11¾ "

MONTHLY REPORT FOR JUNE, 1898.

	Lump.	Grate.	Nut.	Pea.	Dust.	Mine run.	Total.
Weight on cars.....	17,959½	4,389	525	706½	706½	1,800	26,086½
Weight on wagons.....	7,319½		842	977	1,160		10,298½
Mule track.....			1,440	1,440	1,440	8,712	13,032
Totals.....	25,279	4,389	2,807	3,123½	3,306½	10,512	49,417
Percentages.....	64.9	11.2	7.2	8	8.4		

How disposed of:

To state institutions.....	21,323½ bushels.
To penitentiary.....	22,119 "
To cash orders.....	770½ "
To state orders.....	441 "
To coke-oven.....	500 "
To H. W. Klemp.....	1,430 }
To F. Whitrock.....	1,050 }
To Nebraska state prison.....	1,350 }
To Bashor Creamery Company.....	450 }
Total.....	49,417 bushels.

Remarks:

Number of days worked.....	26
Average for total number of men.....	7 bushels.
Average for total number of men in pit.....	8½ "
Average for total number of men at face.....	22 "
Average of total number of men per day.....	270 men.
Amount of coal produced.....	49,417 bushels.
Amount of coal produced per day.....	1,900 "
Average per pit-car.....	11½ "

MONTHLY REPORT FOR JULY, 1898.

	Lump.	Grate.	Nut.	Pea.	Dust.	Mine run.	Total.
Weight on cars.....	14,242	3,301		653½	653½	3,400	22,250
Weight on wagons.....	9,675½		1,106	1,356½	1,491		13,629
Mule track.....			1,193½	1,193½	1,193½	9,982½	13,562½
Coke-oven.....	125						125
Totals.....	24,042½	3,301	2,299½	3,203½	3,337½	13,382½	49,566½
Percentages.....	66.4	9.1	6.3	8.8	9.2		

How disposed of:

To state institutions.....	16,005 bushels.
To penitentiary.....	23,829½ "
To cash orders.....	2,033 "
To state orders.....	683 "
To coke-oven.....	270 "
To brick-yard.....	501 "
To Nebraska state prison.....	3,400 }
To Klemp.....	1,307 }
To Whitrock.....	1,163 }
To Duff.....	375 }
Total.....	49,566½ bushels.

Remarks:

Number of days worked.....	26
Average for total number of men.....	7 bushels.
Average for total number of men in pit.....	8 "
Average for total number of men at face.....	19½ "
Average for total number of men per day.....	261 men.
Amount of coal produced.....	49,566½ bushels.
Amount of coal produced per day.....	1,905 "
Average per pit-car.....	11½ "
Men on top.....	1,045
Men at face.....	2,526
Mule drivers, cagers, and men loading cages.....	988
Men at work on permanent improvements.....	2,240
Total men.....	6,799

INSPECTOR OF COAL-MINES.

MONTHLY REPORT FOR AUGUST, 1898.

	Lump.	Grate.	Nut.	Pea.	Dust.	Mine run.	Total.
Weight on cars.....	24,055	4,938	450	1,031½	1,031½	.....	31,506
Weight on wagons.....	12,041½	.....	1,324	1,490	2,529	.....	17,384½
Mule track.....	.....	.....	1,343¾	1,343¾	1,343¾	10,900	14,930
Coke-oven.....	662	.....	.....	.....	.....	.....	662
Totals.....	36,758½	4,938	3,117¼	3,864½	4,903½	10,900	64,482½
Percentages.....	68.6	9.2	5.8	7.2	9.1	.....	.....

How disposed of:

To state institutions.....	28,218	bushels.
To penitentiary.....	25,336	"
To cash orders.....	3,793	"
To state orders.....	607½	"
To coke-oven.....	662	"
To brick-yard.....	2,578	"
To Klempt.....	2,063	"
To Whitrock.....	1,225	"
Total.....	64,482½	bushels.

Remarks:

Number of days worked.....	27	
Average for total number of men.....	9½	bushels.
Average for total number of men in pit.....	11½	"
Average for total number of men at face.....	22	"
Average of total number of men per day.....	254	men.
Amount of coal produced.....	64,482½	bushels.
Amount of coal produced per day.....	2,388	"
Average per pit-car.....	11½	"
Men on top.....	1,174	
Men at face.....	2,912	
Mule-drivers, cagers, and loading.....	675	
Men on permanent improvements.....	2,097	
Total men.....	6,859	

MONTHLY REPORT FOR SEPTEMBER, 1898.

	Lump.	Grate.	Nut.	Pea.	Dust.	Mine run.	Total.
Weight on cars.....	37,636	7,915	1,050	1,500	1,500	.....	49,601
Weight on wagons.....	11,670½	210	1,589	1,871	3,295	.....	18,635½
Mule track.....	.....	.....	2,733¾	2,733¾	2,733¾	7,500	15,700
Coke-oven.....	450	.....	.....	.....	.....	.....	450
Totals.....	49,756½	8,125	5,372½	6,104½	7,528½	7,500	84,386½
Percentages.....	64.7	10.5	6.8	7.9	9.7	.....	.....

How disposed of:

To state institutions.....	44,237	bushels.
To penitentiary.....	27,218	"
To cash orders.....	3,541½	"
To state orders.....	1,685	"
To coke-oven.....	450	"
To brick-yard.....	1,891	"
To Klempt.....	2,363	"
To Whitrock.....	3,001	"
Total.....	84,386½	bushels.

Remarks:

Number of days worked.....	24	
Average for total number of men.....	13.50	bushels.
Average for total number of men in pit.....	16.50	"
Average for total number of men at face.....	26	"
Average of total number of men per day.....	248	men.
Amount of coal produced.....	84,386½	bushels.
Amount of coal produced per day.....	3,375	"
Average per pit-car.....	11½	"
Men on top.....	1,148	
Men at face.....	3,793	
Mule drivers, cagers, and loading cages.....	750	
Men on permanent improvements.....	512	
Total men.....	6,203	

MONTHLY REPORT FOR OCTOBER, 1898.

	Lump.	Grate.	Nut.	Pea.	Dust.	Mine run.	Total.
Weight on cars.....	52,772	10,628	1,125	900	900	.....	66,325
Weight on wagons.....	16,657½	284	2,008	3,250	3,250	.....	24,231
Mule track.....	.....	.....	5,078½	5,078½	5,078½	8,862½	24,097½
Coke-oven.....	250	.....	.....	.....	.....	.....	250
Cap house.....	.....	.....	.....	.....	.....	125	125
Totals.....	69,679½	10,912	8,211½	8,009½	9,228½	8,987½	115,028½
Percentages.....	65.6	10.2	7.7	7.5	8.7	.....	.....

How disposed of:

To state institutions.....	62,750 bushels.
To penitentiary.....	37,514½ "
To cash orders.....	7,421 "
To state orders.....	2,534 "
To coke-oven.....	250 "
To brick-yard.....	859 "
To cap house.....	125 "
To F. Whitrock.....	1,775 }
To H. W. Klemp.....	1,800 }
Total.....	115,028½ bushels.

Remarks:

Number of days worked.....	26
Average for total number of men.....	16 bushels.
Average for total number of men in pit.....	19½ "
Average for total number of men at face.....	26 "
Average of total number of men per day.....	273 men.
Amount of coal produced.....	115,028½ bushels.
Amount of coal produced per day.....	4,424 "
Average per pit-car.....	11.0 "
Men on top.....	1,209
Men at face.....	4,293
Mule drivers, cagers, and loading cages.....	780
Men at other work.....	825
Total men.....	7,107

MONTHLY REPORT FOR NOVEMBER, 1898.

	Lump.	Grate.	Nut.	Pea.	Dust.	Mine run.	Total.
Weight on cars.....	56,623	10,590	.....	475	475	.....	68,163
Weight on wagons.....	21,474½	361	2,474	3,603½	2,712	.....	30,625
Mule track.....	.....	.....	5,713½	5,713½	5,713½	13,912½	31,052½
Cap house.....	.....	.....	.....	.....	.....	500	500
Totals.....	78,097½	10,951	8,187½	9,791½	8,900½	14,412½	130,340½
Percentage.....	67.4	9.4	7	8.4	7.6	.....	.....

How disposed of:

To state institutions.....	66,638 bushels.
To penitentiary.....	46,423½ "
To cash orders.....	12,252 "
To state orders.....	3,002 "
To cap house.....	500 "
To Fred Whitrock.....	575 }
To Klemp.....	950 }
Total.....	130,340½ bushels.

Remarks:

Number of days worked.....	25
Average for total number of men.....	16½ bushels.
Average for total number of men in pit.....	20½ "
Average for total number of men at face.....	27½ "
Average of total number of men per day.....	301 men.
Amount of coal produced.....	130,340½ bushels.
Amount of coal produced per day.....	5,213 "
Average per pit-car.....	10.9 "
Men on top.....	1,196
Men at face.....	4,673
Mule drivers, cagers, and men loading cages.....	760
Men at other work.....	896
Total men.....	7,525

RECAPITULATION FOR TWELVE MONTHS ENDING DECEMBER 31, 1898.

	Lump.	Grate.	Nut.	Pea.	Dust.	Mine run.	Total.
Weight on cars.....	81,312	18,580				7,939	107,831
Weight on wagons.....	21,556	125	2,264	2,936	2,757		29,638
Mule track.....			9,763%	9,763%	9,763%	4,762	34,052
Cap house.....						600	500
Totals.....	102,868	18,705	12,027%	12,699%	12,520%	13,201	172,021
Percentages.....	64.7	11.7	7.5	7.9	7.8		

How disposed of:

To state institutions.....	107,831	bushels.
To penitentiary.....	50,833	"
To cash orders.....	10,985	"
To state orders.....	2,372	"
Total.....	172,021	bushels.

Remarks:

Number of days worked.....	26	
Average for total number of men.....	17	bushels.
Average for total number of men in pit.....	20	"
Average for total number of men at face.....	24¼	"
Average of total number of men per day.....	383	men.
Amount of coal produced.....	172,021	bushels.
Amount of coal produced per day.....	6,616	"
Average per pit-car.....	11	"
Men on top.....	1,208	
Men at face.....	6,961	
Mule drivers, cagers, and men loading cages.....	801	
Men at other work.....	992	
Total men.....	9,962	

PROCEEDINGS

OF FIRST ANNUAL CONVENTION OF THE STATE ASSOCIATION OF MINERS, HELD
AT TOPEKA, KAN., FEBRUARY 6 AND 7, 1899.

In pursuance of the provisions of senate bill No. 5, an act entitled "An act to create a State Association of Miners," etc., passed at the special session of 1898-'99, the following official call was issued:

TOPEKA, KAN., January 11, 1899.

To all Miners' Associations in the State of Kansas, greeting:

Pursuant to an act passed by the special session of the legislature of 1898-'99, entitled "An act creating a State Association of Miners, with power to elect a Secretary of Mining Industries, who shall succeed to the powers and duties of the State Mine Inspector," it is made the duty of the Commissioner of Labor Statistics to issue a call to the above organizations to assemble in a delegate convention to be held at the state capitol on the first Monday in February, 1899.

Therefore, in accordance with the provisions of this act, the first annual convention of the State Association of Miners is hereby called to convene in the state capitol, in the city of Topeka, at one o'clock P. M., on Monday, February 6, 1899. The basis of representation for the above organizations is as follows: One delegate from each miners' association consisting of five or more members.

Printed credentials will be forwarded to secretaries upon application to the Commissioner of Labor Statistics. Such credentials must be certified by the presiding officer and secretary, and the original returned to the Commissioner at least five days before said meeting. For further information, see copy of the act herein enclosed.

The purposes of this convention shall be the election of a president, vice-president, and secretary, and said secretary shall be *ex officio* State Mine Inspector. Said officials shall constitute the executive board of said association. Such other business as shall be legal under this act may be transacted. All organizations eligible under this act are earnestly requested to be represented.

Find credentials enclosed.

W. L. A. JOHNSON,
Commissioner of Labor Statistics.

In response to the above call, a delegate convention assembled in the office of the Commissioner of Labor Statistics, state capitol building, in the city of Topeka, at one o'clock P. M., February 6, 1899, and the following proceedings were had:

The convention was called to order by Commissioner of Labor Statistics W. L. A. Johnson, and after briefly stating the objects of the convention under the law, he announced that according to the program a temporary organization would be in order.

Nominations were then made for temporary president, and Henry Bousfield was elected temporary president by acclamation.

The next in order was the election of a temporary secretary. R. T. Williamson and Robert Gilmour were nominated.

R. T. Williamson received a majority of all the votes cast, and was elected temporary secretary.

On motion, a committee of three was appointed on credentials, consisting of Joseph Forsyth, J. T. Pratt, and Robert Gilmour.

The next in order was a discussion of the law creating the State Association of Miners, and in accordance with an invitation of the Commissioner of Labor, the convention was addressed at this time by the Hon. G. C. Clemens, the Hon. Wm. H. Ryan, the Hon. J. Fogle, and the Hon. Geo. T. McGrath.

The convention was well pleased and highly edified by the addresses, which were received with great applause.

On motion, the convention adjourned to attend the evening session of the State Society of Labor and Industry at Representative hall, at which the following gentlemen delivered lectures: E. W. Bemis, professor of economics and sociology, on the subject of "Labor Statistics"; George D. Herron, professor of applied Christianity and economics, Iowa college, Grinnell, Iowa, on the subject of "The Ethics of the Labor Movement," and G. P. Grimsley, professor of history and geology, Washburn College, Topeka, on the subject of "Mines and Minerals of Kansas." The latter lecture was illustrated with stereopticon lantern views and was very highly appreciated by the delegates, as were both the other lectures.

MORNING SESSION, FEBRUARY 7, 1899.

The convention convened at eight o'clock A. M., with President Bousfield in the chair. The first order of business was the report of the committee on credentials, who reported the following delegates as entitled to seats in the convention:

E. C. Overman, No. 528 U. M. W. of A., Coal Valley.

Robert Gilmour, No. 597 U. M. W. of A., Scammon.

Thomas Siddle, No. 210 U. M. W. of A., Weir City.

Henry Bousfield, No. 569 U. M. W. of A., Mineral.

James McGeehan, No. 533 U. M. W. of A., Midway.

John Halliday, No. 88 U. M. W. of A., Pittsburg.

Joseph Forsyth, No. 444 U. M. W. of A., Frontenac.

Edward Keegan, No. 501 U. M. W. of A., Chicopee.

W. H. McCluskey, No. 574 U. M. W. of A., Yale.

L. J. Love, No. 1913, K. of L. Miners' Assembly, Pittsburg.

John T. Pratt, South Leavenworth Miners' Association, Leavenworth.

P. J. O'Boyle, North Leavenworth Miners' Association, Leavenworth.

Thomas Herzog, Osage City Miners' Association, Osage City.

Louis Matignon, Scranton Miners' Association, Scranton.

Daniel H. Williamson, Enterprising American Association of Miners, Leavenworth.

J. J. Sullivan, No. 445 U. M. W. of A., Nelson.

R. T. Williamson, No. 469 U. M. W. of A., Fleming.

On motion, the report of the committee on the above delegates was adopted.

Under the head of appointment of committees, the following committees were appointed:

Order of Business: Louis Matignon, of Scranton; James McGeehan, Midway; D. H. Williamson, Leavenworth.

Resolutions: Robert Gilmour, Scammon; John T. Pratt, Leavenworth; Edward Keegan, Chicopee.

Permanent Organization: Wm. McCluskey, Yale; P. J. O'Boyle, Leavenworth; Joseph Forsyth, Frontenac.

Constitution and By-laws: John Halliday, Pittsburg; Thomas Herzog, Osage City; E. C. Overman, Coal Valley.

On motion, the constitution committee was added to the committee on resolutions, and, in addition thereto, the name of J. J. Sullivan.

On motion, a special committee of three was appointed to wait on Attorney-General Godard and urge him to offer a motion of dismissal in the supreme court in the screen and scrip cases now pending, in order that the decision of the lower court may stand, upholding the constitutionality of said laws.

The committee was as follows: W. H. McCluskey, Yale; Thos. Herzog, Osage City; L. J. Love, Pittsburg.

The committee on order of business reported as follows:

1. Reports of committees.
2. Miscellaneous business.
3. Election of permanent officers.
4. Adjournment.

On motion, the report of the committee was adopted.

On motion, a recess was taken until one o'clock P. M.

AFTERNOON SESSION, FEBRUARY 7, 1899.

The convention was called to order at one o'clock, with President Bousfield in the chair. At this time Michael Raphael, business agent of the Cigar-makers' International Union, was introduced, and made a few remarks in behalf of the cigar-makers' blue label, and presented a resolution urging all members of organized labor to smoke only blue-label cigars and patronize home industry. The resolution as adopted reads as follows:

WHEREAS, A number of the cigar manufacturers of this country, and especially the large factories of New York, have combined in a conspiracy not to employ

members of the Cigar-makers' International Union. These employers encourage tenement-house and child labor, and even convict labor, the product being placed on the market as being made by skilled labor. Frequent attempts to conceal the odious system of production are resorted to by using a fraudulent label, thereby intending to represent that the cigars were made by union labor.

* WHEREAS, When these conditions are minimized in their injurious effects on members of the union, through the assistance rendered by organized labor and friends, other methods are resorted to by unscrupulous employers, in imposing a strike or inaugurating a lockout, designed only to create discontent and prejudice against the union, only that they (the manufacturers) may make a larger profit, and the wage-earner, driven from his union, forced into submission to the very worst and most degrading conditions, that can only be compared to chattel slavery.

WHEREAS, While the foregoing sets forth injustice to the producer, it is also of importance to the consumer, as cigars made in tenements or under non-union conditions usually are unsafe to smoke, bearing the germs of disease, through the filth prevailing in many places where they are made: therefore, be it

Resolved, That the State Miners' Association does hereby agree to urge all members and friends not to patronize any store unless cigars are sold bearing the label of the Cigar-makers' International Union, and a full line of such goods; be it further

Resolved, That we notify Daniel Harris, chairman of the joint advisory board of cigar-makers' unions of New York, 340 East Eighth street; be it further

Resolved, That, in insisting that the union label shall be on every box, we will give our preference to home industry; be it further

Resolved, That a copy of these resolutions be furnished to the press for publication.

On motion, a recess was taken to permit the members to attend the session of the State Society of Labor and Industry and to participate in the election of its permanent officers.

EVENING SESSION, FEBRUARY 7, 1899.

The convention was called to order at 7:30 P.M. by President Bousfield.

Commissioner Johnson being present, on motion he was invited to take the chair and preside during the election of officers.

The committee on permanent organization then reported that it was the sense of their committee that the matter of permanent organization be left to the convention.

On motion, the report was adopted.

At this time a motion prevailed that no delegate be allowed to speak more than twice on the same subject, and not more than three minutes at each time.

The committee on resolutions being ready to report, reported favorably on resolution No. 1, by Delegate Bousfield, which reads as follows:

WHEREAS, The miners of this state have suffered innumerable indignities and untold misery through the accursed systems known as the screen and scrip systems; and

WHEREAS, The cases against the screen and scrip practices have been fought to a successful end in the lower courts; and

WHEREAS, These cases are now pending in the state supreme court; and

WHEREAS, It is the sense of this first annual convention of the State Association of Miners that the cases pending in the state supreme court should be dismissed, that the decisions of the lower courts may stand: therefore, be it

Resolved, That we, the representative miners of the state of Kansas, in convention assembled, and in accordance with the instructions from our constituents, do represent and urge upon the Hon. A. A. Godard, attorney-general, that said desired motion of dismissal is in accord with the law of equity, fairness, and justice, and represents the wishes and demands of the mining fraternity of Kansas; and be it further

Resolved, That a committee of three be appointed to wait upon the Hon. A. A. Godard, attorney-general, to demand at his hands his honest and persistent efforts to have a speedy hearing in these cases and have said screen and scrip cases dismissed.

On motion, the report of the committee on resolution No. 1 was adopted.

Resolution No. 2, by Thomas Herzog, was reported favorably, and is as follows:

WHEREAS, The so-called lard oil furnished the local miners at an exorbitant price is endangering the health of the miners who are compelled to use it: therefore, be it

Resolved, That we urge the house and senate to secure for us a better system of oil inspection, to the end that we be not compelled to undergo the nauseous and unhealthful smell of such oil while performing our daily labor.

After a thorough discussion of resolution No. 2, it was the sense of the convention that no system of inspection would correct the evils referred to, as the blame lay largely with many miners in purchasing and using the cheaper grades of oil. It was also the sense of the convention that all miners should coöperate, to the end that the best grades of oil be purchased and used, to protect as far as possible the health of the miner.

Motion being put on the report of the committee on resolution No. 2, it was lost.

Resolution No. 3 was reported favorably, indorsing the Fogle house bill No. 48, regarding the State Association of Miners.

On motion, the report of the committee was adopted, and the bill indorsed.

On motion, the committee report on resolution No. 4 was adopted.

The committee reported favorably on resolution No. 5, indorsing house bill No. 30, and commending the action of the house in passing said bill, and urging the senate to also pass said bill. On motion, the report of the committee was adopted.

Resolution No. 6; the committee reported favorably on house bill No. 472, making mine inspectors inspectors of weight and measures at coal-mines. On motion, the report of the committee was adopted.

On motion, the convention then proceeded to the election of permanent officers.

At this time a motion prevailed that the convention proceed to nominate its officers by informal ballot, and to the election of permanent officers.

The chair appointed Delegates Overman, D. H. Williamson and Matignon as tellers.

Nominations for president being in order, an informal ballot was taken, resulting in the following vote :

Joseph Forsyth, 6 votes; Henry Bousfield, 3 votes; Robert Gilmour, 4 votes; Louis Matignon, 1 vote; Geo. T. McGrath, 1 vote; John T. Pratt, 1 vote; total, 16 votes.

No choice resulting from the informal ballot, the convention proceeded to a formal ballot on the above nominees, resulting as follows :

Forsyth, 4 votes; Bousfield, 5 votes; Gilmour, 1 vote; Matignon, 4 votes; Love, 3 votes; total, 17 votes.

As no choice resulted from this ballot, a motion prevailed that all but the three highest candidates be dropped, and the convention proceeded to a second formal ballot, which resulted as follows :

Forsyth, 8 votes; Bousfield, 6 votes; Matignon, 3 votes; total 17 votes.

As no choice resulted from this ballot, a motion prevailed that the lowest candidate be dropped, and the convention proceeded to the third formal ballot, which resulted as follows :

Forsyth, 13 votes; Bousfield, 4 votes; total, 17 votes.

Delegate Joseph Forsyth having received a majority of all the votes cast, on motion, the rules were suspended and the secretary was instructed to cast the entire vote of the convention for Delegate Joseph Forsyth as permanent president of the State Association of Miners. This being complied with, he was declared elected as permanent president for the ensuing term.

The convention then proceeded to the election of vice-president, and the nominations on informal ballot resulted as follows :

P. J. O'Boyle, 7 votes; John T. Pratt, 6 votes; Louis Matignon, 3 votes; D. H. Williamson, 1 vote; total, 17 votes.

As no choice resulted from the informal ballot, the convention proceeded to the first formal ballot, which resulted as follows :

O'Boyle, 7 votes; Pratt, 7 votes; Matignon, 3 votes; total, 17 votes.

As no choice resulted from this ballot, a motion prevailed that the lowest name be dropped, and the convention proceeded to the second formal ballot, resulting as follows :

O'Boyle, 8 votes; Pratt, 9 votes; total, 17 votes.

John T. Pratt having received a majority of all votes cast, on mo-

tion, the rules were suspended and the secretary instructed to cast the entire vote of the convention for John T. Pratt for permanent vice-president for the ensuing term. This having been complied with, he was declared elected vice-president.

Nominations being in order for permanent secretary, the convention proceeded to nominations by informal ballot, which resulted as follows:

Wm. Murphy, 3 votes; Geo. T. McGrath, 4 votes; Edward Keegan, 3 votes; W. H. McCluskey, 1 vote; John Halliday, 5 votes; Robert Gilmour, 1 vote; total, 17 votes.

No choice having resulted from the informal ballot, the convention proceeded to the first formal ballot, which resulted as follows:

McGrath, 4 votes; Keegan, 7 votes; Halliday, 5 votes; Pratt, 1 vote; total, 17 votes.

No choice having resulted from the ballot, a motion prevailed that the lowest name be dropped and the convention proceed to the second formal ballot, which resulted as follows:

McGrath, 5 votes; Keegan, 6 votes; Halliday, 6 votes; total, 17 votes.

No choice having resulted from this ballot, on motion of Delegate Edward Keegan, the name of Geo. T. McGrath, the lowest candidate, was continued on the list of nominees, and the convention proceeded with the third formal ballot, resulting as follows:

Keegan, 10 votes; Halliday, 7 votes; total, 17 votes.

Delegate Edward Keegan having received a majority of all the votes cast, on motion of John Halliday, the rules were suspended and the secretary was instructed to cast the unanimous vote of the convention for Edward Keegan for permanent secretary of the State Association of Miners and *ex officio* State Mine Inspector for the ensuing term of two years, beginning July 1, 1899. The secretary having complied with this motion, Delegate Edward Keegan was declared elected as permanent secretary of the State Association of Miners for the ensuing term.

At this time the Commissioner of Labor Statistics, in accordance with senate bill No. 5, passed at the special session of 1898-'99, declared the State Association of Miners duly and legally organized, and the president thereupon assumed the functions of his office.

On motion, a recess was then taken until eight o'clock A. M., Wednesday, February 8.

MORNING SESSION, FEBRUARY 8, 1899.

The convention was called to order by President Forsyth. The special committee appointed to wait upon Attorney-General Godard being ready to report, submitted the following:

MR. PRESIDENT: We, your committee, acting in accordance with resolution No. 1, have waited upon Attorney-General Godard and presented the resolution,

stating that it is the sense of this first annual convention of the State Association of Miners that the cases pending in the state supreme court, known as the screen and scrip cases, should be dismissed, in order that the decisions of the lower courts may stand. Your committee urged as grounds for this action that the law creating the court of appeals gives said court final jurisdiction in misdemeanor cases. Attorney-General Godard replied substantially as follows: That the appeal in the scrip and screen cases was not made on a question of fact, but upon the question of constitutionality of said screen and scrip laws, and that while our contention with regard to final jurisdiction in misdemeanor cases in the court of appeals was true, an appeal on the unconstitutionality of the law had the right to be heard and determined in the supreme court, and that a motion to dismiss on the grounds your committee urged would not be entertained by the supreme court. The attorney-general stated that the case would probably be argued on February 10, and promised to use his efforts to bring about a speedy termination of the suit.

At this time the following resolution was presented and adopted :

Resolved, That we extend a vote of thanks to Labor Commissioner Johnson and also to his assistant, W. L. Holcomb, for their kind treatment and hospitality during our convention; also, to the house and senate for the privileges they have extended to the delegates attending this convention; also, to Governor Stanley for his address of welcome extended to us before the State Society of Labor and Industry.

At this time a motion prevailed, that when the convention adjourn that the delegates proceed in a body to the house of representatives, where house bill No. 48, relating to the State Association of Miners, was under consideration, and use our united efforts to secure its passage.

On motion, the convention adjourned, to meet on the first Monday in February, 1900, unless sooner called in special session in accordance with the provisions of the law.

EDWARD KEEGAN, *Secretary*.

NOTE.—In accordance with instructions of the convention, the delegates attended a session of the house of representatives while house bill No. 48 was under consideration in committee of the whole, and notwithstanding urgent efforts made by the delegation a motion prevailed that house bill No. 48 be referred back to the house with the recommendation that it be not passed.

A motion prevailed that the constitution of the State Society of Labor and Industry be adopted for the Miners' Association in so far as it applied. Upon examination it is found that said constitution has no application to the Miners' Association. Therefore, the following law creating the State Association of Miners will be the only constitution governing the State Association of Miners.

CHAPTER 33.—LAWS OF 1898.

MINERS' ASSOCIATION, HOW ORGANIZED.

AN ACT creating a state association of miners, with power to elect a secretary of mining industries, who shall succeed to the powers and duties of the state mine inspector.

Be it enacted by the Legislature of the State of Kansas :

SECTION 1. Whenever five or more miners actually engaged in mining coal, zinc or other minerals for wages shall now be organized or shall hereafter organize as a miners' association in any county, city or mining camp in the state, and shall choose a delegate to the state association of miners, such delegate shall, being duly certified by the presiding officer of such association, be admitted to and become a member of the state association of miners until the first Monday in February next following, and until his successor shall have been chosen and admitted; provided, that at any time any such association may recall its delegate by choosing and certifying his successor.

SEC. 2. On the first Monday in February, 1899, and every year thereafter, the delegates elected to said state association of miners shall assemble at the state capitol, at an hour and place to be fixed by the secretary in his annual call therefor, to be mailed to each association at least ten days before such assembling; provided, that the call for the first Monday in February, 1899, shall be issued by the commissioner of labor statistics. When such delegates shall have assembled, on the first Monday in February, 1899, the commissioner of labor statistics shall preside until the state association of miners shall have organized. The delegates present at the time and place fixed for the said first assembly, or any subsequent assembly, shall be deemed a quorum competent to transact all business to be done. The delegates shall elect a president, vice-president, and secretary, and said secretary shall be known officially as state secretary of mine industries, and shall be *ex officio* state mine inspector, and shall collect and publish statistics of mine industries of the state. Said officials shall constitute the executive board of said association and shall hold their offices until the next annual meeting and the election of their successors; but upon demand of the presiding officers of five associations, at any time, the president shall immediately convene the delegates, by special call issued in like manner as the annual call, for the purpose of electing a successor to said secretary, and if, at said election, another person shall receive a majority of the votes cast, he shall immediately be entitled to succeed said secretary. One so elected may be removed in like manner.

SEC. 3. When said delegates shall have assembled on the first Monday in February, 1899, and shall have elected said officers, and the state association of miners shall be deemed constituted, and the commissioner of labor and statistics shall so declare, and the president elected shall thereupon assume his functions, and said society shall thereafter continue and shall be known by said designation of the state association of miners.

SEC. 4. The term of office of the state mine inspector shall cease at noon on the 1st day of July, 1899, and said secretary shall thereupon be vested with all the powers given to and charged with all the duties cast upon the state mine inspector by any law of this state, and shall become and be in all respects the successor of said state mine inspector.

SEC. 5. The annual report of said secretary shall be published as those of other state officers, and he shall receive a salary of fifteen hundred dollars per annum, payable as other state salaries are paid, and not to exceed one thousand

dollars for expenses. He may, by permission of the executive council, appoint one deputy mine inspector, to hold at his pleasure, and to receive a salary of seventy-five dollars a month, and necessary expenses, to be audited by said secretary and certified to the state auditor for payment monthly.

SEC. 6. All laws now in force referring to the state mine inspector, not inconsistent with the provisions of this act, shall, after the 1st day of July, 1899, be construed to refer instead to the said secretary of mining industries.

SEC. 7. Every association desiring to be represented in said meeting on the 1st Monday of February, 1899, shall, at least five days before said meeting, certify to the commissioner of labor statistics the appointment of its delegates.

SEC. 8. This act shall take effect and be in force from and after its publication once in the official state paper.

Approved January 6, 1899. Published January 11, 1899.

We append hereto two other laws that were passed at the session of 1899, both relating to mines and miners :

CHAPTER 165.—LAWS OF 1899.

RELATING TO SHAFTS IN COAL-MINES.

AN ACT providing for the sinking of escape shafts at coal-mines in the state of Kansas, and providing that same be connected with main or hoisting shaft, and providing a penalty for the violation of this act.

Be it enacted by the Legislature of the State of Kansas:

SECTION 1. In all coal-mines that are now or have been in operation or which may hereafter be put in operation in the state of Kansas, prior to the 1st day of March, 1899, and which are worked by or through a shaft, slope, or drift, and in which more than ten miners are employed in each twenty-four hours, if there is not already an escapement shaft to each and every said mine or communication between each and every mine and some other contiguous mine, then there shall be an escape shaft or some other communication such as shall be approved by the secretary of mine industries or mine inspector, making at least two distinct means of ingress or egress for all persons employed or permitted to work in such mine. Such escape shaft or other communication with a contiguous mine aforesaid shall be constructed in connection with every vein or stratum of coal worked in any mine, and the time to be allowed for such construction shall be four months when such mine is under one hundred feet in depth, and eight months when said mine is over one hundred and not over two hundred feet in depth, and one year for all mines over two hundred and not over three hundred feet in depth, two years for all mines over three hundred and not over four hundred feet in depth, three years for all mines over four hundred and not over five hundred feet in depth, and five years for all mines over five hundred feet in depth.

SEC. 2. Said escape shaft shall be constructed at least three hundred feet from main or hoisting shaft or any buildings connected therewith, and said escape shaft shall be provided with stairways securely fastened, so as to bear the combined weight of not less than fifteen men ascending or descending the same. Said stairways shall be so constructed as not to exceed forty-five degrees of elevation by each section of said stairway, and each section shall have substantial guard-rails securely fastened, and the stairways shall be separately partitioned from the parts of such shafts used as upcasts or downcasts, and the traveling ways between the bottom of main shaft and the escape shaft or stairway shall be at least five feet

in height. Said traveling ways shall be kept clear of all obstructions, and stagnant or standing water shall not be allowed to accumulate in any traveling way between the upcast and downcast shafts.

SEC. 3. Whenever the owner, agent or operator of any mine shall neglect, fail or refuse to comply with sections 1 and 2 of this act, it shall be the duty of the secretary of mine industries or state mine inspector, when apprised of this fact, to enter complaint with the county attorney of the county in which such mine or mines are located, and such county attorney shall immediately prosecute said owner, agent or operator of said mine the same as in other cases; and in all prosecutions under this act it shall be conclusive evidence against the party charged if it shall be conclusively proved that said escape shaft was not constructed according to the provisions of this act and within the time heretofore stated. Any owner, operator, agent or lessee who fails to comply with sections 1 and 2 of this act shall be deemed guilty of a misdemeanor, and shall on conviction be fined in a sum not less than five hundred dollars nor more than two thousand dollars, or by imprisonment not less than six months nor more than two years, or by both such fine and imprisonment.

SEC. 4. All acts or parts of acts in conflict with this act are hereby repealed.

SEC. 5. This act shall take effect and be in force from and after its publication in the official state paper.

Approved March 4, 1899. Published March 29, 1899.

CHAPTER 152.—LAWS OF 1899.

WAGES FOR LABOR, HOW PAID.

AN ACT to compel the payment in lawful money of the United States of all time-checks, due-bills, orders, or orders for merchandise issued in payment of wages for labor.

Be it enacted by the Legislature of the State of Kansas:

SECTION 1. That any time-check, due-bill, order, or orders for merchandise, issued by any person, firm, or corporation, to any person in their or its employ, in payment of wages for labor, shall be dated at the time of its issuance, and, after fifteen days from the date of issuance, shall, at the option of the holder thereof, be payable by the maker in lawful money of the United States; provided, that nothing in this act shall be construed to repeal any law now on the statute-book.

SEC. 2. In the event the maker of any time-check, due-bill or orders for merchandise issued in payment of wages for labor shall refuse to redeem and pay the same in lawful money of the United States, and the holder thereof brings an action to recover thereon, said maker shall be liable for double the amount of said time-check, due-bill or order for merchandise, to the holder thereof, together with a reasonable attorney fee, to be recovered in such action.

SEC. 3. This act shall take effect from and after its publication in the official state paper.

Approved February 28, 1899. Published March 8, 1899.

TWELFTH ANNUAL REPORT

OF THE

INSPECTOR OF COAL-MINES,

STATE OF KANSAS.

FOR THE

YEAR ENDING DECEMBER 31, 1899.



TOPEKA, KAN.

W. Y. MORGAN, STATE PRINTER.

1900.

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1899

LETTER OF TRANSMITTAL.

Hon. W. E. Stanley, Governor :

SIR—In compliance with the law relating to mines and mining, I tender you the Twelfth Annual Report of the State Coal-mine Inspector, for the year ending December 31, 1899.

Respectfully,

EDWARD KEEGAN.

Inspector.

221012

TABLE OF CONTENTS.

- I. Letter of Transmittal.
- II. Introduction.
- III. World's Product of Coal.
- IV. Production of Coal in Kansas, by Counties.
Crawford, Cherokee, Osage, Leavenworth, Atchison, Bourbon, Chau-
tauqua, Cloud, Coffey, Ellsworth, Elk, Franklin, Labette, Linn,
Lincoln, Republic, Russell, and Shawnee.
- V. Earnings of Kansas Coal-miners.
- VI. A Mine Explosion.
- VII. Strikes.
- VIII. Recommendations Relating to the Mining Laws.
- IX. Fatal and Non-fatal Accidents.
- X. The Screen Law.
- XI. The Escapement-shaft Law.
- XII. Record of Mine Maps and Boiler Inspection, etc.
- XIII. Proceedings of Second Annual Convention of State Association of Miners.
- XIV. Index.

INTRODUCTION.

HAVING been elected to the office of State Mine Inspector by the State Association of Miners, and realizing the importance of the honor conferred upon me, I entered upon the duties of my office with the earnest intention of fulfilling those duties in such a manner as to reflect no discredit on the miners for the choice they had made. Conscious of this desire, I may be pardoned if I felt somewhat sanguine as to the result. On entering upon the discharge of those duties, however, I found the work of such a nature that to meet with even a reasonable degree of success required the most vigorous and persistent effort in overcoming many unforeseen hindrances.

Having absolutely no data to begin with, and knowing that the statistical report for the whole year would be required, it behooved me to make at least one inspection of every coal-mine in the state before the end of the year. With the aid of my assistant, this, I am happy to state, was successfully accomplished.

In attempting to enforce the escapement law, I was met with a vigorous protest from a number of the operators, and, as the law is somewhat ambiguous, I had recourse to the attorney-general. On learning from him that I was right in regard to the matter, I so notified all coal companies affected by it, and the law has since been strictly observed.

Soon after I assumed the duties of the office the anti-screen law was declared constitutional, and in the enforcement of this law I encountered opposition from those companies only which employed non-union labor. Again I appealed to the attorney-general. This time he advised me to give the companies time to make the necessary changes at their mines. After giving them sufficient time after notification, I went round and found that all were apparently complying with the law, with but two exceptions, and those mines I promptly closed down until they complied.

This report has been delayed on account of returns from the coal companies coming in slowly, one reason for the delay being the fact that the data for the entire year was called for on one blank. No returns for the quarters ending March 31 and June 30 were on file, as required by law, upon my assuming the duties of the office, and in order to cover the entire year the data for the four quarters were called for in the one blank. While, perhaps, under a strict construction of

the law, the data for three months only could have been demanded in the one report, the statement for the previous quarters not having been called for, it is only fair to state that the larger companies were, as a rule, prompt to respond. With the smaller companies I had a great deal of trouble, and in many instances I was obliged to go to their offices and get the desired information from their books and bulletins.

This report has been written in the first person singular throughout, not on account of the egotistical tendencies in my nature, but as a matter of convenience. Lest any misconstruction be placed on my conduct on this account, I wish it clearly understood that any success I may have attained in the performance of the duties of this office has been due, in a great measure, to the able cooperation of my assistant. He had my full confidence to act as my second self in all things, and in no single act of his has he shown that my confidence in him was misplaced. As the Inspector has a larger territory to inspect, it devolves upon the assistant to attend to most of the correspondence and issue all the notices, quarterly blanks, etc., and he also attends to the inspection of mines as far as his limited expense fund will allow him. Therefore, it must be borne in mind that the pronoun "I" may refer to either or both of us.

The production of coal in Kansas during the year 1899 was the largest in the state's history. Ten thousand and eighteen men and 180 boys were employed in and around the mines, including strip pits, and produced 4,096,895 tons of coal, valued at \$5,124,248.01. This shows an increase over last year's production of 263,489½ tons. Notwithstanding the remarkable briskness of the trade, and the high price of coal at the mines in the latter part of the year, there is apparently no increase in last year's selling prices as compared with 1898. This may be due to the fact that a number of the large companies did not report the selling price of their coal. The Inspector is of the opinion that the actual value of the state's product is far in excess of the figures here given, but was compelled to strike an average from the figures that reached this office.

During the year 1899 sixteen fatal accidents occurred, being one fatal accident for each 256,056 tons of coal produced, which is 28,962 tons more for each fatal accident than was produced in 1898.

WORLD'S PRODUCT OF COAL.

In the following table, taken from the United States geological survey, by Edward W. Parker, is given the coal product of the principal countries for the years nearest the one under review for which figures could be obtained. For the sake of convenience, the amounts are expressed in the unit of measurement adopted in each country and reduced for comparison to short tons, of 2000 pounds. In each case the year is named for which the product is given:

COUNTRY.	Usual unit in producing country.	Equivalent in short tons.
Great Britain (1898) long tons,	202,054,516	226,301,058
United States (1898)..... “	196,405,953	219,974,667
Germany (1898).....metric tons,	130,928,490	144,283,196
France (1898)..... “	32,439,786	35,748,644
Austria-Hungary (1897)..... “	35,858,000	39,515,516
Belgium (1898) “	22,075,093	24,326,752
Russia (1897)..... “	11,207,475	12,350,638
Canada (1898).....short tons,	4,172,655	4,172,655
Japan (1896) metric tons,	5,019,690	5,531,698
India (1897).....long tons,	4,063,127	4,550,702
New South Wales (1898)..... “	4,736,000	5,304,320
Spain (1898).....metric tons,	2,526,600	2,784,313
New Zealand (1897).....long tons,	840,713	941,600
Sweden (1897).....metric tons,	224,343	251,264
Italy (1897)..... “	314,222	346,273
South African Republic (1897) long tons,	1,600,212	1,792,237
Queensland (1897) “	358,407	401,416
Victoria (1897)..... “	236,277	264,630
Natal (1897)..... “	243,960	273,235
Cape Colony (1897) “	113,851	127,513
Tasmania (1897)..... “	46,674	52,275
Other countries*..... “	2,000,000	2,240,000
Total		731,534,602
Percentage of the United States.....		30

*Includes China, Turkey, Servia, Portugal, United States of Columbia, Chile, Borneo and Labuan, Mexico, Peru, Greece, etc.

COAL PRODUCT OF THE UNITED STATES IN 1898, BY STATES.

STATES.	Num- ber of mines.	Loaded at shipment (short tons).	Sold to local trade and used by employees (short tons).	Used at mines for steam and heat (short tons).	Made into coke (short tons).	Total pro- duction (short tons).	Total value.	Average number of days active.	Average price per ton.	Average number of em- ployees.
Alabama.....	82	4,926,828	107,576	145,808	1,355,071	6,535,283	\$4,932,776	250	\$0 75	10,733
Arkansas.....	17	1,167,103	13,256	25,120	.....	1,205,479	1,238,778	163	1 03	2,555
California and Alaska.....	7	3,133,568	19,996	4,724	.....	1,690,288	4,095,915	265	2 53	314
Colorado.....	104	3,132,676	130,305	117,820	695,546	4,076,347	4,686,081	220	1 15	6,440
Georgia and North Carolina.....	3	146,778	1,194	6,389	101,721	235,082	212,537	292	1 83	534
Idaho.....	2	.....	1,039	.....	.....	1,039	2,675	157	2 57	7
Illinois.....	329	15,596,888	2,149,808	852,603	.....	18,599,299	14,567,598	175	78	35,026
Indiana.....	141	4,398,078	387,790	130,810	4,065	4,920,743	3,994,918	189	81	8,971
Indian territory.....	22	1,310,178	16,632	34,055	20,601	1,381,466	1,927,638	198	1 32	3,216
Iowa.....	187	3,981,362	572,063	65,417	.....	4,618,842	5,260,716	219	1 14	10,262
Kansas.....	110	3,079,601	277,022	49,932	.....	3,406,555	3,703,014	194	1 09	7,197
Kentucky.....	116	3,537,429	253,629	55,206	41,644	3,887,908	3,084,551	187	79	7,614
Michigan.....	31	4,618,990	36,941	18,953	.....	4,674,884	3,532,257	253	75	4,818
Maryland.....	17	232,155	75,622	7,945	.....	315,722	462,711	245	1 47	715
Missouri.....	124	2,393,315	249,662	43,344	.....	2,688,321	2,871,296	198	1 07	6,542
Montana.....	36	1,261,814	29,493	19,386	169,110	1,479,803	2,824,207	216	1 57	2,339
New Mexico.....	16	949,903	7,660	17,601	17,124	992,288	1,344,750	242	1 35	1,873
North Dakota.....	18	71,223	1,660	1,147	.....	.....	.....	187	1 12	151
Ohio.....	431	13,053,427	1,226,184	222,913	14,343	14,516,867	12,027,836	169	83	26,986
Oregon.....	5	54,305	3,290	589	.....	83,895	93,591	142	3 65	199
Pennsylvania.....	689	48,019,561	1,520,750	732,984	14,891,838	65,165,133	43,352,858	229	67	79,611
Tennessee.....	51	2,199,075	37,971	52,523	733,327	3,022,896	2,337,512	234	77	6,643
Texas.....	16	678,732	3,247	4,755	.....	686,734	1,139,763	245	1 66	2,130
Utah.....	20	485,716	9,845	9,845	86,606	593,709	752,252	243	1 27	739
Virginia.....	20	1,029,185	19,564	16,234	750,291	1,815,274	1,070,417	230	59	1,855
Washington.....	23	1,748,411	30,636	56,966	48,558	1,884,571	3,352,798	270	1 78	3,145
West Virginia.....	225	12,865,903	471,796	61,176	3,202,124	16,700,999	10,131,264	218	61	21,607
Wyoming.....	23	2,696,326	21,555	108,447	35,384	2,863,812	3,064,190	242	1 28	3,475
Total bituminous.....	2,862	133,871,530	7,987,848	2,865,292	22,167,353	166,592,023	\$132,586,313	211	\$0 80	255,717
Pennsylvania anthracite.....	340	47,088,581	1,238,066	5,055,997	.....	53,382,644	75,414,537	152	1 41	145,504
Grand totals.....	3,202	180,960,111	8,925,914	7,921,289	22,167,353	219,974,667	\$208,000,850	190	\$0 95	401,221

COAL PRODUCT OF KANSAS—1899.

COUNTIES.	No. of tons produced (2000 lbs.)	Per cent. of state production.	Value of coal at mine (mine run).
Crawford.....	2,096,745.6	51.180	\$2,371,227 12
Cherokee.....	1,306,239	31.884	1,472,385 81
Leavenworth	308,864	7.539	529,220 64
Osage	260,803.8	6.363	493,011 38
Coffey	39,740	.970	99,350 00
Bourbon.....	31,000	.756	62,000 00
Linn	25,618	.622	30,413 70
Franklin	8,062	.197	16,528 25
Labette	7,410	.189	16,672 50
Cloud	6,146	.150	14,596 75
Atchison	2,500	.061	8,750 00
Republic	1,696	.041	4,240 00
Shawnee	728	.018	2,184 00
Chautauqua.....	600	.014	1,500 00
Lincoln.....	400	.009	1,200 00
Ellsworth	195	.004	585 00
Elk	120	.0024	300 00
Russell.....	27.6	.0006	82 80
Totals.....	4,096,895	100	\$5,124,248 00

CRAWFORD COUNTY.

CRAWFORD county still continues to be the largest coal-producing county in the state, and in the opinion of many it will retain first place for years to come. During the year 1899, 3946 men and thirty-five boys were employed in and around the mines of the county, including strip pits, and produced 2,096,745 tons of coal, which is fifty-one per cent. of the entire output of the state, valued at the mine at \$2,371,227.12. This shows an increase of 107,588 tons over the year 1898; in fact, it far exceeds the production of any preceding year. All mines in the county worked an average of 194 days during the year. One hundred and nineteen thousand two hundred and twenty-six kegs, or 2,980,650 pounds of powder, valued to the miner at \$239,452, were used, or practically one keg for every seventeen and one-half tons of coal mined. Several new shafts have been sunk during the past year, and should the coal trade remain as active in 1900 as it has through this year, Crawford county will undoubtedly forge still further ahead in her output of coal in the coming year. See tables on pages 12, 13, 14, and 15.

RECORD OF INSPECTION.

Mine No. 1 of the Mount Carmel Coal Company is located at Frontenac, on a switch of the Atchison, Topeka & Santa Fe railroad. This mine has been in operation over twelve years, and at the time of Inspector's visit it was producing 1000 tons of coal per day. It has been known to produce as high as 1900 tons per day. The tower at this mine had slipped and given away to such an extent that it had to be raised two feet and a new foundation placed under it. This was a critical undertaking, as it meant the raising of hundreds of tons, and one miscalculation or wrong move would have precipitated the entire structure to the ground, wrecking it completely. But under the management and direction of Peter McCall, underground superintendent, the work was carried out to a successful issue. He had the tower raised gradually, bracing it securely as he proceeded, until finally he got it high enough to have a permanent foundation placed under it. Then large and substantial braces were built from the ground to the top of the tower which hold it securely in place.

The main or hoisting shaft has also been retimbered and two new cages were put on; these were automatic, as before. They formerly used a three-gear double engine for hoisting. This had been taken out and replaced with a first-motion double engine of about 400 horse-power. All of the above-mentioned improvements had just been completed shortly before my first visit to this mine, at which time I spent three days—the 10th, 11th and 12th of August—going over and inspecting the mine.

While going through the mine, I noticed that the roadways in entries that had been driven in the last three years are in worse condition than in those that were

driven years prior to that time. The reason is easily found. A little over three years ago the wide-entry system was established in Cherokee and Crawford counties. This system was introduced as a matter of economy. The companies had been paying one dollar per yard for entries twelve feet wide and eighty cents per yard for brushing. Under the wide-entry system, the miner was allowed to take the coal out twenty-one feet wide, and did not receive anything for yardage, except the usual rates for brushing. In this way the companies figured they would save one dollar per yard on all entry driving. That was all right until a squeeze came, when it would cave in on a roadway sometimes thirty feet high; then the cleaning of it up and securing it with timbers would cost five or six dollars per yard, and in many instances more. In this way the companies have learned a lesson that will do more to abolish the wide-entry system than any other means could do, as it only proves to be economy for which they pay dearly in the end.

The volume of air going into this mine registered 60,600 cubic feet per minute. The fan, which is fifteen feet in diameter with five-foot blades, was making sixty-eight revolutions per minute. The main shaft is the downcast. The main entries are driven east and west; cross-entries north and south. The air travels to the face of the main entries, where it is divided, going north and south around the face of workings, and returning by the way of overcast to air-shaft. In this way, four separate currents of air are kept circulating through the mine. Notwithstanding this fact, the air is very unclean and injurious to breathe by the time it reaches the last body of men on its return. This was due to the great distance the air had to travel, and also on account of the foul air and black damp which oozed out of the old workings. The nearest point from which the coal is being taken is a mile from the bottom of the shaft, and this makes it a difficult matter to haul great quantities of coal, such as they were then doing.

The traveling way which leads to the stairway attracted my attention soon after I went into the mine; I noticed it was only about three feet high, and as the law specifies that all traveling ways shall be five feet high, I questioned Mr. McCall about the matter and asked him to have this passageway brushed and timbered so as to conform to the law. He answered that this passageway had been in almost the same shape as I found it during the twelve years the mine had been running, and that no other Inspector had made any complaint about it; but he said if I insisted that it had to be brushed and timbered he would certainly do it. I told him that my duty demanded me to insist on the work being done, and besides I did not think it was right that the miners should have to crawl through a place three feet high which the law demanded should be five feet high. I have visited the mine since and found that the passageway had been brushed and timbered. An average of 275 miners, 6 boys, 5 underground day men, and 22 overground day men, working 240 days, produced 230,326 tons of coal during the year. WILLIAM HART is pit boss, and PETER MCCALL underground superintendent. JOSEPH FLETCHER is superintendent of all this company's mines in Crawford county.

Mine No. 5 belonging to the same company is located one mile west of Chicopee, and has connections with the Santa Fe railroad. It gave employment to 260 miners, 5 boys, 50 underground day men, and 29 overground day men, and produced 263,206 tons, working 275 days during the year. This mine is supplied with all of the most modern improvements to be found at a mine. A large double, first-motion engine of about 400 horse-power is used for hoisting. Three large boilers, in good condition, with safety-valve and water-glass attachment, furnish sufficient steam to run all machinery. Gravity shaker and revolving

INSPECTOR OF COAL-MINES.

CRAWFORD COUNTY COAL-MINES.

Office No.	Name of operator or company.	Post-office address.	Name or number of mine.	Name of pit boss or underground foreman.	Location of mine.	Has mine railroad connection?	Name of railway.	Kind of opening
1	Mount Carmel Coal Company	Topeka	1	Wm. Hart.	Frontenac	Yes.	Santa Fe.	Shaft.
2	"	"	5	Edward Flynn	West of Chicopee	"	"	"
3	"	"	6	John O'Leary	West of Frontenac	"	"	"
4	"	"	7	Joseph Wilson	Northwest of Frontenac	"	"	Strip.
5	"	"	"	"	"	No.	"	Shaft.
6	Western Coal and Mining Company	Pittsburg and St. Louis	2	Philip Roiser	West of Fleming	Yes.	Mo. Pac.	"
7	"	"	3	John St. John	Fleming	"	"	"
8	"	"	4	James Hall	Northeast of Yale	"	"	"
9	"	"	5	James Gardner	Yale	"	"	"
10	"	"	7	Peter White	South of Fleming	"	"	"
11	Wear Coal Company	Pittsburg and Topeka	2	Wm. Kirkwood	Kirkwood	"	"	"
12	"	"	5	James Matthews	Northeast of Pittsburg	"	Memphis	"
13	"	"	6	John Kirkwood, sr.	North of Pittsburg	"	Mo. Pac.	"
14	"	"	7	Ed. Roberts	Northeast of Pittsburg	"	Santa Fe.	"
15	"	"	"	"	"	No.	Memphis	Strip.
16	Kansas & Texas Coal Company	St. Louis	37	Wm. Egley	Litchfield	Yes.	Frisco	Shaft.
17	"	"	64	Wm. McKinley	Southwest of Pittsburg	"	Memphis	"
18	"	"	"	"	"	No.	Mo. Pac.	"
19	Pittsburg & Midway Coal Company	Midway	4	Thomas R. Jones	Northeast of Midway	Yes.	Frisco	Strip.
20	"	"	5	Wm. Morgan	"	"	Santa Fe.	Shaft.
21	"	"	6	J. C. F. McLean	Midway	"	Memphis	"
22	"	"	"	J. E. Berins (contractor)	"	"	Frisco	"
23	Pittsburg Coal and Coke Company	Pittsburg	2	John Ryder	Southwest of Pittsburg	"	Frisco	Strip.
24	"	"	3	John Halliday	"	"	Santa Fe.	Shaft.
25	Central Coal and Coke Company	Weir City and Kansas City	9	Robert Gilchrist	West of Nelson	"	Mo. Pac.	"
26	"	"	15	David Anderson	South of Chicopee	"	Memphis	"
27	Weir Junction Coal Company	Weir City	1	Jonathan Schwab	South of Fleming	"	"	"
28	Hamilton & Grant	"	1	Wm. Hamilton, jr.	"	"	"	"
29	Bruce Coal and Smelting Company	Bruce	1	George Wallace	Bruce	"	"	"
30	Arnott Coal Company	Pittsburg	1	David Arnott	Northeast of Pittsburg	"	Santa Fe.	"
31	W. A. Swan Coal Company	"	1	Robert Ratliff	West of Pittsburg	"	K. C. P. & G.	"

32	Kansas & Texas Coal Company.....	Pittsburg and St. Louis	54	Jos. Barrett.....	Southwest of Pittsburg.....	Yes.	Frisco.....	Shaft.
33	Kansas Commercial Coal Company.....	Kansas City.....	1	Chris. Newlands.....	Fuller.....	"	K. C. P. & G.....	"
34	Ryder & Playter.....	Pittsburg.....	2	John Ryder.....	W. Twentieth st., Pittsburg,	"	Frisco.....	Slope.
35	Robson Bros.....	"	1	Wm. Robson.....	Pittsburg.....	No.	"	Shaft.
36	Wilson Bros.....	"	1	Geo. Wilson.....	North of Pittsburg.....	"	"	"
37	Minerd Bros.....	"	1	— Minerd.....	"	"	"	"
38	Wilson & Barber.....	"	1	Harry Barber.....	W. Twentieth st., Pittsburg,	"	"	"
39	Huntington & Co.....	"	1	E. T. Butler.....	"	"	"	"
40	Peel & Smith.....	"	1	Joseph Peel.....	Fair-grounds, " "	"	"	"
41	C. A. Stansberry.....	"	1	C. A. Stansberry.....	Northeast of " "	"	"	"
42	Butler Coal Company.....	"	1	E. T. Butler.....	West Sixth street, " "	"	"	Slope.
43	Reidling & Massy.....	"	1	Bruce Reidling.....	Northeast of " "	"	"	Shaft.
44	C. A. Beck.....	"	1	Thos. Henrietta.....	West of " "	"	"	"
45	"	"	1	"	"	"	"	"
46	W. H. Miller.....	Mulberry.....	1	John Turnbull.....	Northwest of Mulberry.....	Yes.	Memphis.....	Strip.
47	Davis Bros.....	Coalvale.....	1	John Davis.....	Coalvale.....	"	"	Shaft.
48	Jos. Lewis.....	"	1	Chris. Hanna.....	"	"	"	"
49	D. & A. Bell.....	"	1	R. T. Williamson.....	"	"	"	Drift.
50	Brown & Gilmore.....	Pittsburg.....	1	Homer Brown.....	West of Pittsburg.....	No.	"	Shaft.
51	W. C. Beck.....	Pittsburg.....		"	"	Yes.	{ Frisco.....	Strip.
							{ Santa Fe.....	
							{ Memphis.....	
							{ Mo. Pac.....	
52	Other strip pits (estimated).....							

screens are in use. Railroad-tracks are laid on each side of the shaft on top, and it is so arranged that coal can be loaded into eight different railroad-cars at one time.

The mine is ventilated by a fan fifteen feet in diameter with five-foot blades. The volume of air passing into the mine at the time of my first visit registered 44,480 cubic feet per minute. The fan was out of order at that time, and was only making thirty-six revolutions per minute. In spite of this fact, it is one of the best-ventilated mines that I have found in the state. There was one entry, however (the ninth south), that did not get its proper share of air. Mr. Flynn stated that he would have that remedied in a day or two.

One other defect I found was in the manway. It is separated from the air-shaft by buntings placed two or three feet apart. The company did not wish to brattice this, as it would reduce their air space one-half. Under ordinary conditions the manway could have been left as I found it, protected as it was by the banisters on the one side of the stairway and the buntings on the other, but there was a blacksmith shop on the bottom, and the smoke from the fire went up the air-shaft and manway whenever new fires were lighted, and men traveling the manway at that time would be almost suffocated before they reached the top. I requested the superintendent to have it partially bratticed at once, and if that did not prove effective, to have it bratticed all the way up. This he promised to do.

On my second visit to this mine I found the stairway partially bratticed, but it did not carry off the smoke as it should. I therefore requested the superintendent to brattice it clear to the top. This was done, and it is now one of the best stairways to descend into and ascend out of the mine that there is in the state at the present time. The mine is worked on the room-and-pillar system. The vein averages about forty inches in thickness.

Mine No. 6 belonging to the same company is located about one-half mile west of Frontenac, and connected with the Atchison, Topeka & Santa Fe railway. This is comparatively a new mine, having been sunk in 1898. Two visits of inspection were made to this mine, besides the visit there on account of the explosion which took place on the 14th of December. On my first visit to the mine I found it in good condition, with the exception of the lack of timbers on the roadway; this allowed the roof to shell off and fall. On my second visit, which was in response to a call made by the miners calling my attention to the condition of the traveling way, I found the mine in excellent condition except the traveling way. In it I found considerable slate had fallen, which was allowed to lie there; this made it awkward for the miners to walk through to get to the stairway. I requested that the slate be cleaned up and the roof timbered; I had occasion to go through it since that time, and I noticed that this matter had been attended to, and it is now as good a traveling way as there is in any mine in the state.

About the beginning of October the main south entry went through on main west entry of the No. 1 mine. One hundred and forty miners, six boys, and sixty day men, working 274 days, produced 134,641 tons of coal during the year 1899. The condition of the mine and the system of ventilation are explained under the head of "The Mine Explosion."

Since the above was written, mine No. 1 belonging to this company has been abandoned. The company intends to work out nearly all the coal left in it with this No. 6 mine. At the present writing over 400 miners are employed, and the average daily output is about 1500 tons of coal, which is the largest production of any mine in the state.

Mine No. 3 belonging to the Western Coal and Mining Company is located at Fleming, and is connected with the Missouri Pacific railway. There are two openings; one is used for hoisting, and the other for ventilation and escape-ment. At the time the Inspector visited this mine it was not working, owing to the strike that existed then. A few men were working, however, blasting rock on the main entries leading from the bottom of the shaft. Two thousand feet had been brushed on the west side, and about 1500 feet on the east side. The company intends putting in an electric motor, with which to haul the coal from the face of the main entries to bottom. The foreman intends making much-needed improvements to air-courses. Some of these he already had brushed and cleaned out when I went there. In fact, he seems thoroughly to understand his duty and the necessity of furnishing good air to the men working under him. He stated that whenever the trouble between the company and the miners was settled, or when the mine started up again, he thought that he would have it in such shape as to be able to properly ventilate it. If he succeeds in doing this, it will be appreciated by all concerned, as the report from the miners who have worked there, and from those who preceded me as Inspector, together with my own observation of how things must have been before any work was done on air-courses, is not very gratifying as to ventilation. But if Mr. St. John continues cleaning out and improving the air-courses, and the company sinks a new air-shaft, or increases the size of the air-shaft already in use at this mine, I have no doubt the mine can yet be well ventilated.

Some time after my visit to this mine it commenced operation, with a number of miners imported from other fields. The company reported fifty-eight miners, ten underground day men, and eight overground day men, working 160 days, produced 37,153 tons of coal during the year. JOHN ST. JOHN is pit boss. ARCHIE CRAIG is superintendent for all of this company's mines in Kansas.

Mine No. 4 belonging to the same is located northeast of Yale and is connected with the Fort Scott & Yale branch of the Missouri Pacific railway. Eighty negroes were employed at this mine at the time of Inspector's visit. They did not seem to understand the work, and were not producing very much coal; they were principally strangers who had taken the places of the striking miners. The mine was capable of employing 150 good workmen. Ventilation by fan 12 feet in diameter, with blades 3 feet 9 inches wide; speed of fan, 62 revolutions per minute; is capable of running 120 revolutions. The volume of air traveling registered 28,000 cubic feet per minute. A stationary engine placed on the bottom hauls coal by means of a tail rope from the straight north, the northeast and northwest sides of the mine. The company reported 136 miners, 17 underground day men, 9 overground day men, working 269 days, produced 81,610 tons of coal during the year. EDWARD ROBERTS was pit boss, succeeded later by JAMES HALL.

Mine No. 5 belonging to the same company is located at Yale, and connected with the Missouri Pacific railroad. This is a large mine, which, at the time of my first visit, was standing idle on account of the strike, which was then and is yet in progress. The fact that this company did not employ any of the negroes they imported into this coal-field in this particular mine for several months after the strike began indicates that they do not consider them practical coal-miners. And I must say that I concur with them in their views of these "gents." A close observation of their manner of digging coal has convinced me that a large

majority of them were out of their latitude, and would never clog the wheels of the coal trade with overproduction of the article.

An electric-motor engine of about twenty-five horse-power is used to haul coal from the west side of the mine. Preparations were about completed, when the strike commenced, to pull the coal from the other side of the mine in the same manner. This mode of hauling coal has proved to be a decided success in this mine. I believe in the course of time the electric motor will be brought into general use in a great many coal-mines, from the fact it is a speedier, cleaner and no doubt a cheaper way to haul coal, especially in large mines, than any other means now being used.

The ventilation of the mine was good. The volume of air at intake registered 29,000 cubic feet per minute, and when the fan is running properly it is capable of pulling 40,000 cubic feet per minute through the mine. The roadways were all dry and clean. All buildings in connection with this plant were in good condition. This mine is capable of employing over 300 men. It gave employment to 184 miners, 15 underground day men, 10 overground day men; working 244 days, it produced 111,935 tons of coal during the year. ED. ROBERTS was pit boss, succeeded later by JAMES RAE.

Mine No. 7 belonging to the same company is located one-half mile south of the Missouri Pacific railway. Depth of shaft, sixty-eight feet; size of same, 8x13; size of air-shaft, 8x8. Mechanical ventilation by fan sixteen feet in diameter with four-foot blades. All buildings on top of shaft, including shaft tower, were well constructed, being strong and substantial. The mine is equipped with self-dumping cages. Gravity and shaker screens are used to screen coal. The blacksmith shop is a veritable machine-shop. Besides the usual forge blowers, there is a little ten-horse-power engine placed in the shop, which is used to run a cross-cut and rip saw, drill-press, emery-wheels, lathes, and forge blowers. They are fixed so that they can do all kinds of repair work right in the blacksmith shop. A large artesian well furnishes the water for the boilers. Pipes are laid all over the yard around the shaft, and water plugs, located at irregular places among the buildings, are ready to be turned on and brought into use in case of fire. This well also furnishes water to the miners living in the camp. This is a splendid feature and one that is to be commended, as it provides a supply of good water to the miners and their families.

After examining everything on top of shaft, I went below and found the sanitary condition of the mine was good. The volume of air at outlet registered 54,760 cubic feet per minute. The mine is opened up and operated on the double-entry system. Main entries run east and west; cross-entries run north and south. About eighty colored miners, who had been imported from West Virginia, were at work in this mine at the time of Inspector's visit, on July 9. There is a mule stable situated about ninety feet from the bottom on the west side, the neatest of the kind I have seen in any mine during my travels; it is thirty-six feet square and eight feet high, with twelve stalls; it also has connections run into it from the water-tank on top of the mine, from which a large stream of water can be obtained at a moment's notice in case of fire.

There is a large, roomy manway in air-shaft. The roads leading from the east and west of main shaft to air-shaft are brushed six feet high, which makes a good traveling-way for the employees. In fact, everything in and around the mine was in good shape, and showed evidence of a general conformity to the mining laws of the state. The only thing that detracted from the appearance of the place was the remains of a large stockade or board fence that had been built

all around the shaft at the inception of the strike, and also the number of Winchester rifles that were kept in the office, close to the mouth of the shaft. The company reported 152 miners, 12 underground day men, 9 overground day men, working 219 days, produced 82,871 tons of coal during the year. JAMES GARDNER was mine boss, succeeded later by PETER WHITE.

Mine No. 2 belonging to the same company is located one mile west of Fleming and connected with the Mo. Pac. R. R. It employed 9 miners, 1 day man, 300 days, and produced 8286 tons of coal during the year. This is an old mine that has been in operation for a number of years. It is operated principally to supply coal for the engines of the Mo. Pac. R. R. Co. PHIL. RAESER is mine boss.

Mine No. 2 belonging to the Wear Coal Company is located at Kirkwood, four miles southeast of Pittsburg, and connected with the K. C. F. S. & M. railway. This mine gave employment to 70 miners, 2 boys, 15 underground day men, 14 overground day men, worked 180 days during the year, and produced 52,146 tons of coal. At the time I first visited this mine, on August 12, I found it in a deplorable condition. It is operated principally on the single-entry system. The roadways in nearly every part of the mine were very wet and muddy. At what is known as the parting branch, on the south side, the water was six or eight inches deep. The mine is subject to large inflows of water, which greatly cripples the condition of the roads; in fact, it had almost been full of water no less than three times this year. The mine foreman ordered a force of men to work on the roads and ditches the day after I made my first visit.

The ventilation of the mine was poor which was partly due to the neglect of the parties in charge of the mine, and also to the inflows of water washing out stoppings in a great many places, which allowed the air to leak through and return to the air-shaft instead of going to the face of the workings. On third south, off main east, required a door in place of a curtain. At what is called the main east, off first south, also required a door in place of a curtain. At different points the curtains at the mouth of the rooms were torn and needed repairing. In some entries the air did not reach the face, on account of connections being left open one, two and three rooms back; these should have been curtained in order to send the air to the face of entry. The foreman promised to hang the doors mentioned and also to attend better to the curtaining of the mouth of the rooms.

At this mine I knew the law regulating the amount of powder to be taken into the mine was being violated, although in my travels around the mine I could scarcely find a miner with a full keg of powder in his possession. They must have passed the signal to each other that I was coming and prepared themselves accordingly by hiding their powder away. The foreman, however, acknowledged that the miners were in the habit of taking full kegs of powder into the mine, whereupon I insisted that this would have to be stopped at once. He stated that he had done all in his power to put a stop to it, going so far as to threaten to discharge any one who took a full keg of powder into the mine, but owing to the number of air-holes by which the miners could descend into the mine it was next to impossible to stop them from smuggling their full kegs with them. I was determined to have the matter regulated. To do this I interviewed Supt. A. B. Kirkwood, and stated the condition of affairs to him. He promised to make the necessary arrangements on top, whereby the miners would not receive any full kegs of powder, and so put a stop to the practice of carrying the kegs to their homes and smuggling them into the mine. Some time after this the Inspector

visited the mine and found that no more full kegs were being handled by the miners.

The doors that were required at the time of my first visit had been put up. The mine was in a little better condition than when first visited. The foreman stated that unless the company re-leased the coal they were then working, the mine would be finished in two or three months. He stated that if the company continued to work the mine for any length of time he would give it a general overhauling and ventilate it up to the requirements of the law. Since that time the mine has been abandoned, and the track pulled out. WILLIAM KIRKWOOD is mine boss. A. B. KIRKWOOD is superintendent for all of this company's mines.

Mine No. 5 belonging to the same company is located about two miles north-east of Pittsburg, and connected by switch with the Missouri Pacific and Atchison, Topeka & Santa Fe railways. This mine was also in poor condition when first visited by the Inspector, on July 27, but a great deal of work was being done to improve the mine. The west side was about finished at that time, and would soon be abandoned. The company intended putting in a stationary engine on the west side of the bottom to haul all the coal from the east side with an endless rope. This mine was opened up on the single-entry or, rather, the gouge-out system. At the time of my visit everything had been changed to the double entry system, and when the connections were made that were in progress I have no doubt the ventilation and condition of the mine in general will meet the requirements of the law. The company had secured a large tract of land east of this mine, which will be taken out by this shaft and a new shaft they are sinking within a half mile of the Kansas & Texas mine No. 37. On the occasion of my second visit to this mine I found a great improvement in it. A good current of air was circulating around the faces; all roadways dry and clean and in good shape; the rope haulage spoken of above had been put in, and the management claimed that it was a decided success. One hundred and thirty-nine miners, three boys, twenty-six underground day men, and twelve overground day men, working 240 days, produced 103,540 tons of coal during the year. WILLIAM MCKINLEY was mine boss, succeeded later by JAMES MATTHEWS.

Mine No. 6 belonging to the same company is located north of Pittsburg, and connected with the A. T. & S. F. railway. Inspector visited this mine July 29, and found it in the best condition of any mine owned by this company at that time. The foreman of the mine is an old man, who has spent the greater part of his life around coal-mines, and an inspection of this mine shows that he is thoroughly capable of managing a mine. Great care and good judgment were evident everywhere. The ventilation is by fan fourteen feet in diameter with four-foot blades, forcing and exhausting alternately in summer and winter. The total volume of air going into the mine registered 15,700 cubic feet per minute. The mine was opened up by driving the main entries east and west from the bottom, but after driving about 400 feet in fault, in the main east, this entry was stopped. A double entry was turned north; cross-entries are turned east off this every 400 feet, double-entry system being used. The Inspector traveled all over the mine, accompanied by the foreman, and found it in good condition, except in a few places where curtains had been torn and needed repairing. At the mouth of third east a door was needed where a curtain was hanging. On the west side of shaft the air was circulating around the working-face very well. A few curtains required fixing. Also, about 200 feet along the second north entry, being dry and dusty, needed to be cleaned out and watered.

The required improvements mentioned above the foreman promised to have done at once. In fact, his day men had the curtains nearly all repaired before I got through inspecting the mine; the rest, he assured me, would be attended to immediately. A light double engine of about thirty-four horse-power is used for hoisting. One large shell boiler, four feet in diameter by forty feet long, furnishes steam to run the machinery. All buildings around the mine are in good condition. The average thickness of vein is forty inches. The roof of this mine is very poor. A black slate ranging from six inches to a foot thick comes down with the coal in most places. All boys over twelve and under sixteen years of age must furnish certificates showing that they have attended school three months out of the year. Seventy-five miners, two boys, working 235 days, produced 79,609 tons of coal during the year. JOHN KIRKWOOD, sr., is mine boss.

Mine No. 7 belonging to the same company is located about four miles northeast of Pittsburg. This mine had just been sunk to the coal when Inspector first visited it. They were sinking an air-shaft, and were about to begin sinking an escapement shaft 300 feet from the main shaft. Depth of main shaft, 80 feet; size of same, 8 x 13 feet; size of air-shaft, 6 x 8 feet. Coal measured 42 inches in thickness. On the occasion of my second visit to this mine, about three months from the time I had visited it before, I was surprised at the change that had taken place in so short a time. The mine was opened up on the double-entry system, and was giving employment to about eighty miners. Two shifts had been worked steady from the time the mine was sunk. This accounted for its speedy development. The mine is well arranged, and if the present system is continued it bids fair to be a good and well ventilated mine for years to come; 80 miners, 12 underground day men, 13 overground day men, working 37 days, produced 11,406 tons of coal during the year. ED. ROBERTS is pit boss.

Mine No. 4 operated by the Pittsburg & Midway Coal Company is located one-half mile northwest of Midway and connected with three different railroads, viz., the Santa Fe, Frisco, and Memphis. The mine is a shaft opening, and is ventilated by a fan twelve feet in diameter having three-and-one-half-foot blades. At the time of the Inspector's visit to this mine the fan was revolving at the rate of 68 revolutions per minute and was drawing the air into the mine at the rate of 33,600 cubic feet per minute. This volume of air, if properly conducted, was sufficient to ventilate the mine, but on account of defective curtains, lack of doors, and leakages from other causes, good air at the working-faces was the exception rather than the rule. The air man, whose duty it was to attend to the ventilation, accompanied me through the mine. When I called his attention to the defects above mentioned and asked him why he had not attended to the matter, he informed me that he had not time to attend to it, as his time was taken up with other work. The Inspector, after making a thorough examination, notified Mr. Jones, the mine foreman, of the general condition of the mine, and requested him to make the necessary improvements, all of which Mr. Jones assured the Inspector would be promptly attended to. In all other respects this mine is well equipped, having a large double hoisting engine and good boilers. All the boilers in use under this company are insured. The insurance company send their boiler inspector around at regular intervals to examine them and keep them in good condition. The cages in use are automatic dumpers. The coal is screened by gravity and shaker screens. All buildings around the mine were in good condition. THOMAS JONES is pit boss. JOHN MORRISON is president and general superintendent.

Mine No. 5 belonging to the same company is located at Midway, and, although it was sunk five years ago, it has laid idle most of the time, so that it has only been about two years in actual operation. During the year 1899 it worked 273 days, and gave employment to 120 miners, 11 underground day men, 9 overground day men, and produced 78,285 tons. The ventilation in this mine was a little better than in mine No. 4, but there was room for improvement in it even then. A good deal of neglect was apparent in the matter of putting up doors when needed. Mr. Morgan, pit boss, promised to attend better to this in the future. Machinery and hoisting apparatus are all of modern and most-improved style. WILLIAM MORGAN is pit boss.

Mine No. 6 belonging to the same company is a new mine that was sunk in the latter part of the year. The underground working of the mine is being opened up on the double-entry system, and will in the near future be in a position to produce a large quantity of coal. Sixty miners, 17 day men, working 50 days, produced 10,885 tons of coal.

Mine No. 37 belonging to the Kansas & Texas Coal Company is located northwest of Litchfield, connected with the Kansas City, Fort Scott & Memphis, St. Louis & San Francisco and Missouri Pacific railways. This mine has been in operation about nine years. The work around the bottom and for quite a distance into the mine has been poorly conducted. The entries have been driven crooked in order to avoid cutting horsebacks. The company purchased eighty acres of coal land north of the mine about two years ago. They are now working this. A survey has been taken, and the system of work has been changed from the single-entry to the double-entry system, with the exception of one double entry on the west side of the mine. This entry has four single entries turned off of it. The air on these single entries was weaker than in any other part of the mine. On the east side of the mine I found two places where doors were required instead of the curtains that were hanging. I called the foreman's attention to these, and he promised to have the doors put up immediately. The pump being out of order caused the roads to be very wet on the third and fourth north off the main east. The pump was started before I left, and it reduced the water perceptibly. This is another of the mines that were involved in the strike which was in progress at the time I visited there. They were working the mine, however, with a reduced force. In the neighborhood of fifty-five miners, nearly all white men, were employed at that time. This mine has two openings 65 feet deep; size of main shaft, 8x16; size of air-shaft, 8x10. The fan measures 12 feet in diameter, with $3\frac{1}{2}$ -foot blades. A three-gear, light double engine, of about 50 horse-power, is used for hoisting. Gravity and shaker screens in use. The company's returns to this office show that the mine employed 91 miners and 46 day men, who worked 233 days and produced 70,740 tons of coal during the year. WILLIAM EGLY is pit boss.

Mine No. 64 belonging to the same company is located about one mile southwest of Chicopee, on a switch of the St. L. & S. F. railway. This is a new mine which had just been sunk to the coal, and opened to a distance of about sixty feet from the bottom on each side, when Inspector visited it, in the month of August. An air-shaft had been sunk 300 feet from the main or hoisting shaft. A large force of men were at work on top making preparations to put in an engine to do the hoisting. All kinds of modern fixtures and appliances to be found at a first-class mine are to be put in at this mine. Depth of main shaft, 60 feet;

size of same, 13x8; size of air-shaft, 8x8 feet. The mine is opened up on the double-entry system. The vein averages 44 inches in thickness, and has a splendid roof. From the present appearances this will be a good mine. Seventy-nine miners, 33 day men, working 46 days, produced 14,762 tons of coal. JOHN BARROWMAN was pit boss, succeeded later by WILLIAM MCKINLEY. FLOYD DOUBLEDAY is general superintendent of all this company's mines.

Mine No. 54 belonging to the same company, and leased by W. H. Barrett, is located two miles southeast of Chicopee and connected by switch with the St. L. & S. F. railway. When Inspector visited this mine, on August 10, it was working with a reduced force of miners; they were nearly all colored men who had taken the place of the striking miners. The general condition of the mine was not up to the requirements of the law. The air-shaft which was used as a means of ventilation was too small. The roadways were wet and muddy. The foreman, however, was taking advantage of the slack work to improve the condition of the mine. Men were working on the roads ditching and corduroying them. He intended having the air-courses cleaned out and other improvements made, which would enable him to employ a good number of men when the strike was over. Fifty-five miners, 26 day men, working 140 days, produced 31,453 tons of coal. JOSEPH BARRETT is pit boss.

Central Coal and Coke Company's mine No. 9 is located at Nelson, and connected with the K. C. P. & G. I drove to Nelson one day in August to examine the condition of the above-named mine. At that time this mine was surrounded on all sides by a high board fence or stockade, with a large gate on one side, which served as an entrance to the mine. While driving through this entrance I was accosted by a man who commanded me to stop. I paid little attention to this command, allowing my horse to go ahead, whereupon the man, whom I afterwards learned was a hired guard or sentry, caught my horse by the bridle and held it firmly, repeating his command, and stating that he had orders to allow no one pass through until he was satisfied who they were and what their business was. Finally I told who I was, and my business there, and was allowed to proceed. The outside of the stockade looked foreboding enough, but a glance at the inside revealed a strange sight in a peaceable little mining camp; it looked like a perfect fortress, manned with armed guards and a supply of guns, ammunition, and food enough to resist a long siege from the "enemy."

After viewing matters on top, the Inspector went down in the mine, and upon examination found the condition of the mine generally good. Two overcasts were used—one on each side of main shaft. The volume of air at intake registered 39,850 cubic feet per minute. The mine is operated on the double-entry system. Main entries run north and south, cross-entries east and west. Four cross-entries were working on each side of the shaft. The main north entry is worked to within 200 feet of boundary line. A double entry is turned off at the face of this entry. This will enable them to get all the coal out to boundary line by driving rooms 200 feet north off this cross-entry. The mine is equipped with good machinery. A fan fourteen feet in diameter with four-foot blades is used for ventilation. One hundred and ten miners, 18 underground day men, 11 over-ground day men, working 211 days, produced 70,003 tons of coal during the year. ROBERT GILCHRIST is pit boss. GEORGE K. MACKIE is superintendent for all this company's mines in Kansas.

"CENTRAL COAL AND COKE COMPANY. *Notice to Miners.*—Those in debt for transportation and expense of going to housekeeping will be allowed two-

thirds of their earnings to live on; the other one-third will be credited on their balances."

The above notice, which was posted up at this mine when I visited there, was causing considerable dissatisfaction among the darkeys who had been imported from Alabama by the company to work in this mine. They were under the impression that their transportation was free.

Mine No. 15 belonging to the same company is located one and a half miles south of Chicopee, and connected by switch with the K. C. F. S. & M. railroad. This is a new mine which was sunk during the year. At the time of the Inspector's visit the main entries had advanced about eighty feet from the bottom. The mine was opened up on the double-entry system, main entries running east and west. These entries are driven twelve feet wide, and brushed the full width. Double track is laid in them. An air-shaft had been sunk, 300 feet from the main shaft. They were busy driving places to connect with this air-shaft to enable them to ventilate the mine. I am informed this company has leased 780 acres of land from the Memphis railroad company, which they intend taking out with this shaft. The mine is to be equipped with the very best machinery and appliances, so as to be able to handle the large output of coal which this shaft is destined in the near future to produce. The vein averages forty-four inches in thickness, and is a good quality of coal. The company had commenced to erect houses for the accommodation of the workmen, and the place was taking on the appearance of a fair sized mining camp. Thirty miners, 7 underground day men, 8 overground day men, working 140 days, produced 13,667 tons of coal during the year. DAVID ANDERSON is pit boss.

Weir City Junction Coal Company's mine, known as the "Schwab" mine, is located about three miles north of Weir City, and connected with the K. S. F. S. & M. railroad. Depth of shaft, 50 feet; size of same, $11\frac{1}{2} \times 6\frac{1}{2}$. On the occasion of my first visit to this mine I found it in poor condition. While the volume of air going into the mine was quite sufficient to ventilate the workings, yet there were a number of the miners suffering for lack of air. There were many reasons for this. First, and most important, was the system on which the mine was operated, viz., the single-entry system. The air had to travel all around the mine in a single current. At the time of Inspector's visit they had commenced to clean out an air-course that ran parallel to the third east. I ordered more men to be set to work at this, in order to have it done as soon as possible. When this was done, and the old workings of the first and second east were shut off, it would reduce the distance the air had to travel 1800 feet. On the occasion of my second visit to this mine I found a great improvement in the ventilation, although, if the mine is to be operated for any length of time, it will be necessary to put in an overcast at the bottom or an air-shaft near the face of the workings, in order to properly ventilate the mine. One hundred and twenty-five miners, 12 underground day men, 11 overground day men, working 245 days, produced 53,636 tons of coal during the year. JONATHAN SCHWAB is pit boss.

The Hamilton & Grant mine No. 3, located three miles north of Weir City, or about one-fourth mile east of the Schwab mine, is connected with the K. C. F. S. & M. railroad. On account of some contract or agreement made by the owners of this mine with the Kansas Commercial Coal Company, they are not allowed to ship or sell any coal in the market. They erected six coal-chutes on the main line of the K. C. F. S. & M. railroad, and then built a tramway to these

chutes. They furnish coal to all the engines that run on this end of the Memphis. In this way they are enabled to keep their mine working steady with a reduced force. Twenty miners, working 350 days, produced 14,000 tons of coal during the year. THOMAS MOFFATT is pit boss.

The Arnott & Co.'s mine is located northeast of Pittsburg, and connected with the A. T. & S. F. and K. C. P. & G. railways. Depth of shaft, 50 feet; size, 7x14; size of air-shaft, 8x8. Inspector first visited this mine on July 26. It is operated on the single-entry system, and an inspection showed it to be in the worst condition of any mine in the district. The roadways in nearly every part of the mine were very wet and muddy. A good volume of air was going into the mine, but it was not conducted to the face of the workings. The chief reason for this was that the mine was not taken care of when it was new. The stoppings were poorly built in nearly every part of the mine, especially those close to the bottom, which allowed most of the air to leak and return to the air-shaft without going near the faces. At several places where curtains had been hung to turn the air current I found them torn to shreds, and, in some instances, they had disappeared entirely. On account of the poor stoppings, the black damp from the old workings oozed out and mixed with the little air that was traveling. This was very injurious to the miners who had to breathe it. Everything had a neglected-looking appearance. After going all through the mine, I tried to find Mr. Arnott and explain to him what I wanted done in the way of improving the mine to make it fit for the miners to work in. He had gone home, and I could not see him that night. I therefore wrote him the following letter, which explains itself:

PITTSBURG, KAN., July 29, 1899.

Arnott & Co., Pittsburg, Kan.:

DEAR SIRS—I visited your mine on July 26, as you know, and, after inspecting it from one end to the other, I am obliged to state that I found it in a dreadful condition. The volume of air at the bottom of the shaft was good, but, as I followed air-course, I found that on account of poor stoppings it was allowed to leak to such an extent that when I got to the face of the second east entry off main south I found hardly a breath of air stirring. The same can be said for the air at the face of all the entries on the south side of the mine. After going all through the south side, I started from the bottom to the north side. On the first west entry several improvements are necessary. At one point, in particular, a curtain was hanging; the roof had fallen to a height of two or three feet over this curtain; this allowed every particle of air to escape that should have gone to the face of the entry. Two or three other curtains and some stoppings are required at once at this point. The air being so poorly conducted, and the scarcity of the same, allows the black damp from the old workings to make the small amount that is in circulation heavy and filthy. In fact, the whole mine shows evidence of an utter disregard for the health and safety of your miners. I will, therefore, ask that you commence at once to make the necessary improvements to your airways, stoppings, curtains, and doors, so as to place the mine in a better sanitary condition generally.

Hoping that you will give the above your consideration, and proceed at once to carry out my requests, I am, yours respectfully, EDWARD KEEGAN,

Per FRANCIS KEEGAN, *Assistant Inspector.*

Mine Inspector.

I visited this mine some time after this, and found the condition but slightly improved. I then ordered Mr. Arnott to put in an overcast at the bottom of the shaft on the south side, which would make two separate currents of air circulate through the mine. I also requested him to pay better attention to the airways, curtains, and doors, or I would be obliged to close the mine down. I have learned from different miners since that the overcast was made, and the condition of the mine, although not anything like it should be, was at least 100 per cent. better than it had been. Seventy-eight miners, 15 underground day men, 10 over-

ground day men, working 270 days, produced 70,289 tons of coal during the year. DAVID ARNOTT is pit boss.

The Ryder & Playter slope is located one-fourth mile west of Broadway, on Twentieth street, and connected by switch with the St. L. & S. F. railroad. This is a drift opening. A little engine of about fifteen horse-power is used to haul the coal out of the slope by means of a tail rope. The Inspector found this mine in poor condition. The air was very weak, a little grate fire in air-shaft being the only means of ventilation. The roadways near the face of the workings were dry and in fair shape, but the main roads near the mouth of the slope were very wet. The miners here were suffering an account of scarcity of air, but the company was constructing a fan house with the intention of placing a fan in air-shaft to ventilate the mine instead of the little pot fire they were using. This will improve the air a great deal. Average thickness of vein, forty-six inches. The roof in some parts of the mine was a red, soft, mushy stuff; at other places there was a good black slate. Thirty-five miners, working 300 days, produced 22,910 tons of coal during the year. JOHN RYDER is pit boss.

The E. C. Sheldon mine, located two miles north of Fourth, Pittsburg, only worked a short time, the beginning of the year, and producing 500 tons of coal. Later, in November, this mine was again opened up by the Minerd brothers, who are still operating it.

The Robson brothers' mine is located within the city limits, on the southeast corner of Pittsburg. This is a horse-power shaft opening, with no railroad connections. The vein averages forty-five inches in thickness. It is a good body of coal and the lessees have no trouble disposing of it, as there is a good local market, and besides, they ship considerable of their output. The mine is ventilated by furnace, with fair results. The volume of air at outlet registered 6400 cubic feet. A few curtains were in poor shape, which caused the air to be a little weak at the face of the workings. Fifteen miners, 2 underground day men, 2 over-ground day men, working 235 days, produced 14,147 tons of coal during the year. ROBSON BROTHERS are lessees and foremen.

The Wilson & Barber mine is located a little over a quarter of a mile west of Broadway, on Twentieth street, Pittsburg. This is a horse-power shaft opening. Ventilated by furnace. Roadways were in fair shape. The coal produced is hauled with wagons to railroad-cars and also sold to supply local trade. HARRY BARBER is pit boss.

The Huntington & Co. mine is located one mile west and one-quarter mile north of Broadway, on Twentieth street, Pittsburg. This mine was first leased by the Minerd brothers; they only operated it a short time; then the lease was taken by Huntington & Co. The mine was only opened up and the air connections completed when Inspector visited it. The air-shaft is partitioned off the main shaft. A little grate fire was used in this air-shaft for ventilation. This was only a temporary fixture, as the lessees intend to have a good large grate built and put in place to ventilate the mine. Nine miners, 2 day men, working 152 days, produced 3883 tons of coal during the year.

The George Wilson mine is located on Twenty-sixth street, close to the street-car line that runs from Pittsburg to Frontenac. This is a horse-power shaft

opening, forty feet deep, 10x12 in size. A new air-shaft had just been completed and a furnace placed in it at the time of the Inspector's visit to the mine. This mine has been troubled with water, but a good windmill pump has been put up which keeps the mine in good shape. The vein averages thirty-eight inches in thickness and has a good black-slate roof. All coal is sold to supply local trade. Five miners, 4 day men, working 300 days, produced 4800 tons of coal during the year. ROBERT PATTERSON is pit boss.

Hooper & Berry operated a small shaft northeast of Pittsburg for a few months during the year. Later, Bruce Redding and J. W. Massey took hold and operated it. The land belongs to T. T. Perry, of Girard, and is leased by him to those parties. The mine produced 700 tons of coal during the year.

C. S. Stansberry operated a little slope for a number of months during the year; is located one-fourth mile east of the Redding & Massey shaft. This land is also owned by T. T. Perry, of Girard.

The C. A. Beck mine, located one mile west of Pittsburg, was operated under lease by Henrietta & Co. a number of months during the year. It was abandoned, however, about the end of the year, on account of bad roof and low coal. This is where J. R. Moore met his death, a large pot-shaped rock falling on him, killing him almost instantly.

Joe Lafayette and David Castleman sank a small shaft close to the fair grounds, in Pittsburg. Castleman worked a short time in it and gave it up. Lafayette continued to work in it until the month of October, when he sold out to Peel & Smith, who now operate it. The land is owned by I. W. Jenness and leased by him to the above-named parties, who pay 18 $\frac{3}{4}$ cents per ton royalty on the coal they produce.

W. A. Swan Coal Company mine No. 1, located two miles west of Pittsburg, has two shaft openings ninety-six feet deep; one is used for hoisting and the other for ventilation and escapement. This mine has been in operation about five years, and in the last year it has been fitted up with the latest modern improvements, such as new fan and fan house, new tower and shakers, screens, and a number of other buildings, all strong and substantial. A large boiler, 25 feet long and 60 inches in diameter, with 60 three-inch flues, furnishes steam to run all machinery. The mine is worked on the double-entry system, and the ventilation easily meets the requirements of the law. A door was required at the north parallel to the main north, and a door placed at the mouth of the main east was crippled, and losing considerable air that should have gone to the face of first north. The foreman promised to attend to these defects.

On traveling up the escapement stairs I found them to be in a very precarious condition; there was no partition between these stairs and the air-shaft, nor anything that would prevent a man from falling to the bottom in case he lost his balance. Besides this, they were constructed with about seventy-five degrees of elevation, and there was no banister. In fact, it was the most dangerous stairway I ever saw in a mine. I called the foreman's attention to it. He claimed it was hardly ever used, and he also claimed that other Inspectors had seen it and had made no complaint about it. I replied that it was an escapement shaft, and would have to be used in case anything happened to the hoisting shaft, or in any

other cases of emergency, which would make it all the more dangerous if any number of men were traveling up it in a hurry. There was every chance for it to collapse under the strain of their weight, or some of them might lose their balance, and there was nothing there to prevent them from falling to the bottom. I therefore requested that the stairway be taken out and rebuilt at the proper degree of elevation, and secured, either by boarding it up from top to bottom so as to separate it from the air-shaft, or by placing buntings two feet apart. Before I left he promised faithfully to order lumber and rebuild the stairway, and make it secure and in conformity with the law. Sixty miners and 14 day men, working 235 days, produced 37,500 tons of coal during the year. ROBERT RATLIFF is pit boss.

Pittsburg Coal and Coke Company's mine No. 2, known as the "Pinch-along," is located $1\frac{3}{4}$ miles east of Chicopee, on a switch of the St. L. & S. F. railroad. I visited this mine on August 11. When I approached the engineer, who was a colored man, and asked him to lower me down slowly, so that I could examine the timbering in the shaft, he replied that he could n't run the cage too powerful slow, as it might stick in the shaft and I would have to climb out. I then concluded to have him let me down the best he could. When I got below and examined the mine I found it in a very dangerous condition. On the bottom, and for a distance of about fifty feet along the bottom, the timbers were squeezed down until it was only $2\frac{1}{2}$ feet high, and resting on a couple of pillars built out of railroad ties. The track was sunk down in the bottom to make it high enough to push a pit car under the timbers and onto the cage. The whole thing looked as if it might cave to the grass at any minute. I went into the face of the workings where seven or eight men were mining coal. There was not a breath of air stirring at this point, all the air-courses leading up to it being closed, and had a cave-in taken place anywhere behind those men they would have been completely hemmed in. After looking over the matter, I considered that the lives of the parties working in the mine were in imminent danger. I therefore ordered all the men to cease work and get out of the mine. I then penned the following to the operator of the mine:

W. A. Swan, Pittsburg, Kan.:

DEAR SIR—I visited your mine, known as the Pittsburg Coal and Coke Company's mine No. 2, to-day, and, upon making a careful examination of it, I found that the main or hoisting shaft, and the bottom of same for a distance of fifty feet or more, was likely to cave in at any moment. This, together with the fact that your men were digging coal without a particle of air circulating at the face of workings, or without any means of escape should a cave-in take place on entry anywhere behind them, which is not improbable, caused me to condemn the mine and order the men out. I therefore send you this notice of my action.

Yours respectfully,

EDWARD KEEGAN, *Inspector.*

Per FRANCIS KEEGAN, *Assistant Inspector.*

Immediately after this the rails were taken out and the mine abandoned.

Mine No. 1, leased by the Davis Coal Company, is located at Coalvale. This is a shaft opening, gin power. Size of shaft, 6x12; size of air-shaft, 5x5; depth of shaft, 23 feet. Mine is operated on the single-entry system. At the time of Inspector's visit there were 23 miners employed at this mine. The work was all on one side of the shaft. The main entry runs east; one entry was turned north off main entry, and a west entry was turned off this north entry. The air was poorly conducted throughout the mine. No curtains were hung at the mouth of the rooms. In the north cross-entry I found a curtain hanging which was intended to turn the air into the straight east, and so around the working-faces, until it reached the return. On examining this curtain I found that it was about

a foot short; it thus allowed about 6000 cubic feet of air per minute to escape to the return air-course without reaching any of the working-faces. When I called Mr. Davis's attention to this curtain and requested him to replace it with a door, he ordered the door to be made at once, and before I left it was completed and ready to put in place. He also promised to attend better in the future to the curtaining of the mouth of the rooms. The Inspector was pleased at the promptness observed by this foreman in carrying out his request. A great many foremen make promises which they never attempt to fulfil; many of them try to appear willing to do anything and everything the Inspector requests while he is visiting the mine, but as soon as he is gone they forget their good promises. This, I am glad to say, is not the case with all pit bosses or foremen, and Mr. Davis by his actions demonstrated that he was not one of that kind. Thirty miners, 2 boys, 7 underground day men, 3 overground men, working 270 days, produced 11,000 tons of coal during the year. JOHN DAVIS is pit boss.

The Joe Lewis mine, located at Coalvale, is connected by pit-car track or tramway with the K. C. Ft. S. & M. railroad. There are two shaft openings, seventy-five feet deep; one is used for hoisting and the other for ventilation; size of main shaft, 12x6; size of air-shaft, 6x8. A small thrashing engine is used to do hoisting. The mine is operated on the single-entry system. Main entries run north and south. The general condition of the mine was fair. This mine had been leased by E. P. Davis up to the 1st of August, when the owner, Joe Lewis, took hold of it and operated it since. CHRIS. HANNA is pit boss and JOE LEWIS superintendent and owner.

Dr. A. Bell owns and operates a drift mine at Coalvale, which gave employment to 20 miners, 3 boys, 3 underground day men, 2 overground day men; worked 150 days; produced 4879 tons of coal during the year. This mine had been allowed to run down considerable until five or six months ago, when Mr. Bell hired R. T. Williamson to take charge of the mine. By persistent work and close attention to his duty, Mr. Williamson has improved the condition of the mine a great deal. R. T. WILLIAMSON is mine boss.

The Kansas Commercial Coal Company's mine No. 1, known as the Fuller mine, is located at Fuller, and connected with the Kansas City, Pittsburg & Gulf railroad. This mine has two shaft openings, forty-six feet deep: one is the main or hoisting shaft; the other is used as an air-shaft. A fan twelve feet in diameter with four-foot blades, placed over air-shaft, was running at the rate of ninety-five revolutions per minute. When the Inspector visited this mine it was comparatively idle on account of the strike. The mine was well ventilated at this time, and the roadways were in fair shape. All buildings around the mine were in good condition. Two large boilers, fifty-four inches in diameter and sixteen feet long (one of them one-fourth-inch plate and the other five-sixteenths-inch plate), furnished sufficient steam to run the machinery. Fifty-five miners, 8 underground day men, 8 overground day men, working 245 days, produced 31,912 tons of coal during the year. CHRIS. NEWLANDS is superintendent and pit boss.

The W. H. Miller mine No. 1 is located one and one-half miles northwest of Mulberry, and connected by switch with K. C. Ft. S. & M. R. R. Depth of main shaft, 83 feet; size of same, 7x15; size of air-shaft, 6x9. This shaft was sunk to suit the railroad switch, which causes them to drive their main entries northeast and southwest. The mine was ventilated by a reversible fan 12 feet in di-

ameter with $4\frac{1}{2}$ -foot blades. The volume of air at inlet registered 29,760 cubic feet per minute. There were 50 miners working at this time, and the volume of air going into the mine would have more than supplied them had it been properly conducted, as the mine was operated on the double-entry system. The entries were not driven up even, however, and this caused the last break-through to be too far behind one of the entries, thus causing that entry to be poorly aired. There were also two good doors required where they had two flimsy curtains hanging. The stairway in air-shaft was not partitioned off. The foreman promised to remedy these evils at once. This mine has been in operation over two years, and the foreman claims he never had a visit from a Mine Inspector since it started until I went there, nor had he been furnished with mining laws. The mine was equipped with a $4\frac{1}{2}$ -geared double engine of about 150 horse-power, for hoisting. Two good boilers furnished sufficient steam to run the machinery. Forty-five miners, 8 underground day men, 7 overground day men, working 280 days, produced 31,284 $\frac{6}{10}$ tons of coal during the year. JAMES MATTHEWS was mine boss, succeeded later by JOHN TURNBULL. W. L. MILLER is superintendent.

The Bruce Mining and Smelting Company's mine No. 2 is located one-half mile east of Bruce and connected by switch with the K. C. F. S. & M. railroad. Depth of shaft, 160 feet; size, 7x12 feet. At the time the Inspector first visited this mine, in the month of August, it was ventilated by a small fan forcing the air into it through four- or five-inch pipes. An escapement shaft had been sunk 300 feet from the main shaft. They were busy driving places from both shafts to connect with each other, when the company intended to place a fan over the escapement shaft and make it serve the double purpose of air-shaft and escapement. On the occasion of my second visit to the mine this had been accomplished. A sixteen-foot reversible fan, equal to any and superior to most in the state, had been placed over the air-shaft. It is capable of pulling 60,000 cubic feet of air per minute through the mine. The underground work was rather faulty at that time, but several places had driven through the fault, and as the mine develops the indications are much better.

The foreman of this mine deserves credit for the manner in which he has managed the mine, when the difficulties which have beset him are considered. In the first place, the mine generated considerable carbureted hydrogen gas; in the second place, it was very dry; and lastly, on account of it being new and just opening up, the space for expansion was very limited. As proof of the presence of gas in the mine, two men were slightly burned in the month of July. They had remained out of their room long enough to allow the gas to accumulate, and when they went back into them they ignited it with their lamps. It will, therefore, be seen that great care had to be taken on account of this gas before connections had been made with the air-shaft. In fact, it was then as warm a little place as I have seen for some time. After the connections were made, and the fan put in place, it sent a good current of air around the working-faces. The danger then was that too strong a current could be sent around the working at the time the shots were being fired. Mr. Wallace seemed to understand this and acted accordingly. He kept the road sprinkled and visited the miners' places to see that no dangerous shots had been put in, and when the shot-firers went into the mine he reduced the speed of the fan, almost stopped it, as he considered that if there was any gas in the mine during the day it been swept out with the strong current of air kept in circulation, and it would not have time to accumu-

late enough while the shots were being fired to amount to anything. I learned that several times flames from shots came back as far as the bottom of the shaft. If that flame had encountered a strong current of air on its way out (as every one knows, the flame will travel against the air), it is highly probable that an explosion would have occurred.

In addition to the above precautions used to prevent an explosion, the underground arrangement, in case such a disaster did occur, was first-class. Doors were so arranged at the bottom of the air-shaft that with a few minutes' work a full current of air could be directed into any part of the mine. In my opinion this is a rather dangerous mine, and will bear watching, and I intend, while in my present position, to pay close attention to it, in order that all danger may be guarded against as much as possible. Thirty miners, 7 underground day men, 5 overground day men, working 318 days, produced 9480 tons of coal. GEORGE WALLACE is pit boss and EDWARD BLAKE superintendent.

CHEROKEE COUNTY.

CHEROKEE is the second largest coal-producing county in the state of Kansas. During the year 1899, 2872 men and 73 boys were employed in and around the mines of the county, including strip pits, and produced 1,306,239 tons of coal—almost 32 per cent. of the entire output of the state—valued at the mine at \$1,472,385.81. There were 71,998 kegs (or 1,799,950 pounds) of powder used; or one keg of powder for every 18 tons of coal mined. All the mines worked an average of 167 days. The following companies have sunk new shafts during the past year: The Central Coal and Coke Company, the Southwestern Coal and Improvement Company, J. R. Crowe Coal Company, the J. C. Graham Coal Company, the Fidelity Land and Improvement Company, and the Norton Coal Company. These mines will all be operated on a large scale, and will, therefore, add greatly to the production of the county in the next few years. See tables on pages 34 and 35.

RECORD OF INSPECTION.

Mine No. 5 belonging to the Central Coal and Coke Company was worked out and abandoned in June. Thirty miners, 15 day men, working $73\frac{1}{4}$ days, produced 8957 tons of coal. ARCHIE FULTON is mine boss. GEORGE K. MACKIE is superintendent for all this company's mines in Kansas.

Mine No. 6 belonging to the same company is located one mile west of Weir City, and is connected with the St. L. & S. F. railroad. Depth of shaft, 83 feet; size of same, 7 x 16 feet; size of air-shaft, 6 x 8 feet. This mine gave employment to 140 miners, 19 underground day men, 11 overground day men, and worked 279 days, producing 117,195 tons of coal during the year. This mine is equipped with a large double hoisting-engine of about forty horse-power; gravity and shaker screens to screen coal. This mine is operated on the double-entry system, but it differs from other mines in the manner of driving the main entries. The main entries at this mine run north and south, and are driven twelve feet wide, and brushed the full width of the entry. A double track is laid in these entries all the way from the bottom to the face. The cross-entries are turned north and south and driven 1200 feet; they are then cut off by another entry which runs parallel to the main entry, and worked on the same system as the main entry. Cross-entries are then turned off this parallel entry, and the old cross-entries, including all the space worked out by them, is shut off. This is a splendid system, as it cuts off all old workings and makes it unnecessary to carry the air through them.

On first east on the south of the mine, about 700 feet from the main entry, a small undercast is used which leads from the old and abandoned working to the return air-course. This carries the black damp (that formerly oozed out of the old workings and mixed with the good air going around the working-face) to the

return air-course and up the air-shaft. The same kind of an undercast is placed on the other side of the mine for the same purpose. These undercasts, used in this manner, are a great benefit to the miners working in this mine, as they rid the air they have to breathe from nearly all the impurities that exist in the old workings. I traveled all over this mine in company with the foreman and found it in good condition. A good current of air was circulating around the working-faces. Two overcasts are used, one on each side of the bottom, to conduct the air to the air-shaft.

About eighty-five miners were employed at this mine at the time I visited there. They were about equally divided—one-half being white and the other half colored. The mine could employ a good many more men, but on account of the strike they were obliged to operate it the best they could with the men they had. The stairway partitioned off the main shaft required banisters from top to bottom. I requested the foreman to have banisters put on at once. This he promised to do. I have been unable to visit the mine since, and therefore cannot tell whether this promise was fulfilled or not. There is a splendid vein of coal in this mine; also, good roof. The vein averages forty-six inches in thickness. THOMAS SCOTT is pit boss.

Mine No. 7 belonging to the same company is located north of Scammon and connected with the K. C. S. F. & M. railroad. It employed 158 miners, 33 underground day men, 12 overground day men; working 201 days, produced 85,651 tons of coal during the year. This is a shaft opening, with steam power and mechanical ventilation. Depth of main shaft, 90 feet; size, $7\frac{1}{2} \times 15$; size of air-shaft, 6×8 ; size of fan, 14 feet in diameter, with blades 4 feet 6 inches. The mine is operated on the double-entry system and at time of my visit was well ventilated. The roadways throughout the mine were in fair shape. This is another of the mines owned by one of the "Big Four," and at the time of visit was being operated principally with colored labor, 100 colored miners being employed. The scene displayed at this place was revolting, to say the least. A large barricade of boards eight or nine feet high had been erected around the shaft and extended half way to the town of Scammon. Along the prairie inside of this stockade tents were stretched, in which the dusky miners lived and disported themselves in various ways. At the time of my visit carpenters were busy tearing down the boards and constructing houses out of them. The vein of coal averages 44 inches in thickness. The total volume of air going into the mine registered 35,280 cubic feet per minute. WILLIAM MURRY is pit boss.

Mine No. 11 of the Central Coal and Coke Company is located about two miles southwest of Weir City, and is connected with the K. C. Ft. S. & M. railroad. Depth of main shaft is $62\frac{1}{2}$ feet; size, 7×14 ; size of fan, 4×14 , fan making 68 revolutions per minute. A light double engine, of about 60 horse-power, is used for hoisting. Two cylinder boilers, one 20 feet long by 36 inches in diameter, the other 18 feet long by 36 inches in diameter, furnish sufficient steam to run the machinery. This mine was also involved in the strike that is in existence. At the time of the Inspector's visit it was working with less than half force, the total number employed being about 65 miners, 13 day men below, and 10 day men on top. The largest half of those employed were white men. The mine was producing an average of about 170 tons of lump coal per day at that time. This mine is operated on the same system as mine No. 6 belonging to this company. The main entries are driven north and south and brushed the full width, and have a double track all the way to face. At the time of the Inspector's visit,

CHEROKEE COUNTY COAL-MINES.

Office No..	Name of operator or company.	Post-office address.	Name or number of mine.	Name of pit boss or underground foreman.	Location of mine.	Has mine railroad connection ?	Name of railway.	Kind of opening.....
1	Central Coal and Coke Company	Weir City and Kansas City	5	Archie Fulton.	Northeast of Weir.	Yes.	Memphis.	Shaft.
2	"	"	6	Wm. Scott.	$\frac{3}{4}$ mile west of Weir.	"	Frisco.	"
3	"	"	7	Wm. Murray.	1 $\frac{1}{2}$ miles north of Scammon.	"	Memphis.	"
4	"	"	11	John Morton.	2 $\frac{1}{2}$ miles southwest of Weir.	"	"	"
5	"	"	16	J. W. Jenkins.	1 $\frac{1}{4}$ miles west of Scammon.	"	"	"
6	Kansas & Texas Coal Company	St. Louis.	18	James Duffy.	North of Weir.	"	Frisco.	"
7	"	"	23	George Fulton.	Northeast of Weir.	"	"	"
8	"	"	55	Dan. Thompson.	Northwest of Weir.	"	"	"
9	"	"	49	Andrew Braidwood.	Weir.	"	"	"
10	Barrett & Hayden	Weir City	1	Daniel Miller.	Northeast of Weir.	"	"	"
11	J. H. Durkee Coal Company.	"	1	Adam Humble.	1 mile southwest of Weir.	"	Memphis.	"
12	Hamilton Coal and Mercantile Co.	"	5	Stewart Hamilton.	1 $\frac{1}{2}$ miles northeast of Weir.	"	Frisco.	"
13	"	"	1	Edward Kelly.	1 mile northwest of Weir.	"	Memphis.	"
14	J. R. Crowe Coal Company.	"	1	Tom McCluskey.	Southwest of Weir.	"	"	"
15	"	"	2	James Evans.	North of Weir.	"	Frisco.	"
16	"	"	3	James Myers.	2 miles west of Weir.	"	Memphis.	"
17	"	"	4	J. E. Maxwell.	Southwest of Weir.	"	"	"
18	L. S. Myers & Sons	"	18	David Myers.	Northeast of Weir.	No.	"	"
19	J. C. Graham Coal Company	Scammon	1	James McAllister.	Northeast of Scammon.	Yes.	Memphis.	Slope.
20	"	"	2	William Smith.	Northwest of Scammon.	"	"	Shaft.
21	"	"	3	Pat. O'Donnell.	In Scammon.	"	"	"
22	"	"	4	Wm. Moody.	South of Scammon.	"	"	"
23	"	"	5	Mat. Patterson.	3 miles northwest of Scammon.	"	"	"
24	Jenkins Coal Company.	"	1	Henry Jenkins.	Northeast of Scammon.	"	"	"
25	The Norton Coal Company.	"	3	Cal. Walters.	$\frac{3}{4}$ mile west of Scammon.	"	"	"
26	M. C. Guy & Co.	"	1	M. C. Guy.	In Scammon.	No.	"	"
27	Stone & Dixon	"	1	Stone.	Northeast of Scammon.	Yes.	Memphis.	"
28	Southwestern Coal and Imp. Company.	Parsons and Mineral.	6	John Ryan.	Mineral.	"	M. K. & T.	"
29	"	"	7	Joseph Davidson.	1 mile east of Mineral.	"	"	"
30	Eastern Coal and Coke Company	Cokedale.	1	Joseph Ewart.	Cokedale.	"	Mo. Pac.	"
31	Humble Coal Company	Stippville	30	Wm. Humble, Jr.	1 mile northwest of Turk.	"	Memphis.	"
32	Bennett & Crowe	Weir City	5	Richard Luke.	Southwest of Weir.	"	"	"
33	Scranton & Son.	"	"	Dave Scranton.	South of Weir.	No.	"	Slope.
34	Pat. Harman.	"	1	Pat. Harman.	Southeast of Weir.	"	"	Strip.
35	Jas. A. Lambert.	Stippville	1	Robert Cox.	Turk.	"	"	Slope.
36	Other strip pits (estimated).	"	"	"	"	"	"	Shaft.

Office No.	Kind of power used	Tons of coal produced (2000 pounds to the ton).				Av. paid per ton for mining.		Av. selling price at mine.		Estimated value of output.	Casualties.		Average wages paid day men under ground ..	Average wages paid day men above ground ..	Number of kegs of powder used during year	Remarks.
		Lump ..	Nut and slack .	Mine run ...	Total ...	Lump ..	Mine run ...	Lump ..	Mine run ...		Killed ..	Injured.				
1	Steam,	...	...	8,957	8,957	\$0 92	\$0 55	...	...	\$10,076 62	...	...	\$2 00	\$1 75	480	Abandoned now.
2	"	...	...	117,195	117,195	...	57	...	...	131,844 37	...	2	2 15	2 00	7,492	
3	"	...	...	85,651	85,651	96	57	...	...	96,357 37	1	...	2 15	2 00	6,917	
4	"	...	...	119,383	119,383	*	57	...	...	134,305 87	2	...	2 15	2 00	6,804	
5	"	...	...	5,486	5,486	...	...	...	...	6,171 75	...	...	2 25	2 00	450	Pay by the day.
6	"	42,225	...	43,623	85,748	95	...	...	...	96,466 50	1	...	...	...	3,756	Includes strip.
7	"	27,077	...	18,014	45,118	95	...	...	...	50,757 75	...	...	...	...	1,784	
8	"	11,491	...	20,364	31,855	...	...	...	...	35,836 87	...	...	...	...	1,117	Abandoned now.
9	"	22,621	...	17,500	40,371	...	...	...	...	45,417 37	...	...	2 25	2 00	1,000	Pay by the day.
10	"	*	...	1,500	1,500	...	...	...	...	1,687 50	...	...	2 00	1 50	89	
11	"	51,515	34,702	25,318	111,735	\$1 60	57	\$1 25	...	139,688 75	...	2	2 00	1 50	6,008	
12	"	14,727	6,342	24,430	45,499	1 60	57	1 25	...	56,873 75	...	...	2 00	1 50	2,313	
13	"	37,604	28,376	11,425	77,405	1 40	57	1 20	...	82,886 00	...	...	2 00	1 50	3,875	
14	"	42,068	36,781	22,823	101,672	1 40	57	1 20	...	111,839 20	1	...	2 00	1 50	5,004	
15	"	30,805	21,563	...	52,368	56	56	1 20	...	62,841 60	...	...	2 25	1 75	2,898	
16	"	...	...	5,240	5,240	60	60	1 20	...	6,288 00	...	...	2 00	1 50	360	
17	"	...	...	2,880	2,880	...	60	1 20	...	3,456 00	...	...	2 00	1 50	140	
18	Horse,	1,556	1,330	4,835	7,721	1 50	60	1 30	...	9,295 92	...	...	1 90	1 50	510	Includes strip.
19	"	...	...	12,961	12,961	60	60	1 30	...	12,961 00	...	...	...	...	640	
20	"	31,293	31,293	228	62,914	60	60	1 30	...	31,293 00	1	...	2 08	1 50	1,700	
21	"	23,042	23,042	252	46,336	60	60	1 30	...	23,042 00	...	...	2 00	1 50	1,920	
22	"	11,609	11,609	135	23,543	60	60	1 30	...	11,609 00	1	...	2 00	1 50	532	
23	"	2,400	640	...	4,240	...	...	1 50	...	5,300 00	...	...	2 25	1 75	120	New mine.
24	"	...	...	2,500	2,500	...	60	1 30	...	3,250 00	...	...	2 25	1 75	200	Pay by the day.
25	"	...	...	500	500	...	...	...	...	625 00	3	...	...	...	27	
26	Horse,	...	...	850	850	...	...	...	...	1,062 50	...	...	...	...	47	
27	"	24,288	22,589	6,362	51,239	...	...	1 01	...	51,751 39	...	...	2 10	1 50	3,584	
28	Steam,	61,577	33,076	24,292	118,945	96	75	1 04	...	123,702 80	3	2	2 10	1 50	8,190	
29	"	...	...	2,100	2,100	...	...	...	...	2,362 50	...	...	1 90	1 40	650	
30	"	...	...	14,197	14,197	...	60	...	...	16,326 55	...	...	2 00	1 41	972	
31	Horse,	18,313	13,700	1,285	33,298	1 40	58	1 40	...	39,957 60	1	...	2 00	1 50	2,100	
32	Steam,	2,611	40,550	43,161	86,312	1 50	...	1 50	...	53,951 25	...	...	1 50	1 50	48	Pay by the box.
33	"	...	...	320	320	...	...	...	...	400 00	...	...	...	...	13	
34	"	...	...	320	320	...	...	...	...	400 00	...	...	...	...	20	
35	"	...	...	320	320	...	...	...	...	400 00	...	...	...	...	18	
36	Totals,	390,878	199,099	716,262	1,306,239	5,859	2,203	73	669	\$1,472,385 78	6	16	...	...	71,998	

* No report; production estimated.

which was on August 16, the main north entry was within 100 feet of the boundary line, and had been turned into a room. The main south entry was stopped, owing to the scarcity of miners.

This is a model mine, on account of the system prosecuted. The ventilation was splendid. The roadways were dry and clean and well brushed. The vein averages forty-five inches in thickness, and is a good working coal for the miner. Two overcasts are used, one on the north side and one on the south side of shaft. The overcast on south side was not carrying much air over it, as there were rooms from that side connected with rooms on north side allowing the air from the south to go straight through to north, and over north side overcast to air-shaft. The foreman promised to close this connection up so as to make each overcast take its share of air to air-shaft. One hundred miners, 18 underground day men, 11 overground day men, working 273 days, produced 119,383 tons of coal during the year. JOHN MORTON is pit boss.

Mine No. 16 belonging to the same company, located about one mile west of Scammon, and connected by switch with the K. C. Ft. S. & M. railroad, is a new mine that was sunk this year. The Inspector had occasion to visit this mine to find out whether the "anti-screen law" was being complied with or not. I found that a large tower had been built, and all arrangements made to handle a large daily output of coal. The buildings all around the mine were strong and substantial. I did not have the time to visit the underground work of the mine that day. The company reports 40 miners, 4 underground day men, 4 overground day men, working 75 days, produced 5486 tons of coal during the year.

Mine No. 18 belonging to the Kansas & Texas Coal Company, and leased by W. H. Barrett, is located about one mile north of Weir City, and connected with the St. L. & S. F. railroad. This mine is equipped with a light double engine of about thirty horse-power, to do hoisting. Gravity and shaker screens are in use. Mechanical ventilation, by fan twenty feet in diameter with four-and-one-half-foot blades; speed of fan, forty revolutions per minute. This is one of the mines owned by the Kansas & Texas Coal Company, one of the four companies known as the "Big Four," which was, and is yet, involved in a strike. When the Inspector visited there, on August 2, they were working the mine principally with colored men imported from different parts of the United States to take the place of the striking miners. The actual number employed in this mine at that time was fifty miners (eight white men and the rest colored), twelve day men below, and eight day men on top; two of the day men were colored men, and the rest were white.

The Inspector was informed before going to this mine that the law regulating the amount of powder to be taken into mines was being violated here. I therefore proceeded to have the matter regulated; but on arriving there it was found that almost every one had been supplied with new powder cans, which were filled in compliance with the law. While making the rounds of the mine, however, I found in two or three instances where two men were working in one place they had a full keg of powder in their possession. I instructed these men to procure cans at once, so that each man could only take down $12\frac{1}{2}$ pounds, as prescribed by law, and by doing so no man could get a full keg of powder from the party who gave the powder out on top by stating that he had another man working with him. These miners promised to procure cans at once, and the foreman assured me that he would see that the matter was attended to and carried out as I

requested, and that no more full kégs of powder would be allowed in the mine under any circumstances.

The south side of the mine was abandoned at that time on account of the scarcity of men. The mine was equipped with an endless haulage rope, which extends the full length of the double track on the north side of mine. The intention is to extend this rope along the eighth west cross-entry when the present trouble is settled. Inspector traveled all over that part of the mine which was working at the time, and found the air sufficient for the number of men employed, but when the mine is filled to its capacity of miners it will require a great deal more air than was traveling at face of workings at time of visit to properly ventilate it. The mine is operated on the single-entry system, and the air in making its circuit has to pass so many curtains that are placed at the mouth of the room to conduct it around the faces. The result is, the most of the air is usually lost at these curtains and never reaches the working-face. The area of this mine is so large that I do not hesitate to say that it will be well-nigh impossible to furnish ventilation to all the miners that it is capable of employing, on account of working the mine on the single-entry system. In fact, I believe that in a short time this mine will be a fair sample of what a detriment the single entry is to every one concerned, and especially to the poor miner who has to work in it and exist on the amount of air furnished him. The pit boss of the mine is a conservative and practical man, who will do the best that can be done under the circumstances. He promised to have the airways, curtains, stoppings, etc., well attended to in future. The company's returns to this office show that 136 miners and 62 day men, working 201 days, produced 85,748 tons of coal during the year. The amount of tons stated included all that was produced in the strip pits of Cherokee county owned by this company. JAMES DUFFY is pit boss and W. R. CRANDALL superintendent.

Mine No. 23 belonging to the same company, and also leased by W. H. Barrett, is located northeast of Weir City and connected with the St. L. & S. F. railroad. Size of main shaft, 8x16 feet; size of air-shaft, 8x8 feet; size of fan, 4½x12 feet. This mine is also operated on the single-entry system, and at the time of my visit the miners working there were nearly all colored men; the prairie around the mine was literally covered with tents, in which those miners and their families lived. Main entries run north and south from bottom. The north side of mine was worked out and abandoned at that time. The condition of the mine was very poor, especially in regard to ventilation. At the mouth of the seventh west a door was needed where a curtain was hanging. The air at the face of this entry and in the rooms turned off of it was miserable. The air-course between the eighth and ninth west was in bad shape on account of a cave in air-course. The air in making its circuit had to travel over this cave. In fact, in traveling around the entire west section of the south side of the mine I found that it was a case of driving around falls or caves to make connections for air, and in many cases the places that were being driven around these caves would fall in as soon as the connection was made; in this way the men were working in bad air continually. The roof is soft on this side of the mine and the dusky miners seemed to be incapable of securing it. There were three openings, with an escapement ladder in each. One of these openings is on the fifth west and is used as an upcast for the west side of the main south. A little pot was hanging in it at the time of visit. On the east side of the main south entry the ventilation was better. Sixty miners, 55 day men, working 138 days, produced 45,118 tons of coal during the year. GEORGE FULTON is pit boss.

Mine No. 49 belonging to the same company, and also leased by W. H. Barrett, is located on the north edge of Weir City, and connected by switch with the K. C. Ft. S. & M. railway. There are two openings, 40 feet deep; one is used for hoisting and the other for ventilation and escapement. This is a new mine, and is equipped with three engines: A light double engine, 32 horse-power, is used for hoisting; a small engine is used as pump and fan engine; and a splendid electric automatic engine, with 12x18-inch cylinders, is used for generating electricity to run the mining-machines which are in use in this mine. All of these engines are placed in a large and substantial engine-room near the top of the shaft. One cylinder boiler, 44 inches in diameter, 26 feet long, and one flue boiler, 66 inches in diameter by 18 feet long, with 56 four-inch flues, furnish sufficient steam to run all machinery. The company had three mining-machines in use in the mine at the time of my visit, which were being operated with success. It was estimated that one machine could mine 75 tons of coal per day. All work was paid by the day; the loaders and men who handle the machines receiving a certain price per day; this price I could not learn. The general condition of the mine was good. The volume of air at intake registered 32,000 cubic feet per minute. Roadways were all in fair condition. There were about 30 men employed in this mine at that time. The mine was also equipped with self-dumping cages; they are an invention of W. H. Barrett, the lessee of the mine, and are a neat and easy-working contrivance. Thirty miners or day men, working 200 days, produced 40,371 tons of coal during the year. ANDREW BRAIDWOOD is pit boss.

Mine No. 55 belonging to the same company, and known as the "Daisy," was worked out and abandoned in June. The company reports 49 miners, 25 day men, working 107 days, produced 31,853 tons of coal during the year. DAN. THOMSON was pit boss.

Mine No. 1 belonging to J. H. Durkee Coal Company is located southwest of Weir City, and connected with the K. C. Ft. S. & M. railway. The main entries are driven north and south from bottom. The single-entry system is used. Inspector traveled all over this mine in company with the air man, James Driver, and found it in poor condition. On the first west there was scarcely a curtain hanging at the mouth of the rooms along the entry that did not require repairing. At one place a stopping was needed in place of the curtain that was hanging. On third west, on same side, needed a door where a curtain was in use. In fact, in going all round the mine, I found that the same state of affairs existed in many places in every entry. The reason is easily found, as I consider that the lack of ventilation was due almost entirely to the system on which the mine was worked, viz., the single-entry system. Add to this the fact that there was double the number of miners at work in the mine than it could comfortably accommodate, and the smoke from their lamps had to be carried off by the current of air in circulation, it will easily be seen that it was well-nigh impossible to keep the mine clear when the air had to travel all around the mine in a single current and pass so many curtains where it had every chance to leak.

The roadways in general were wet and muddy, but the foreman was working hard with a force of men on idle days and Sundays corduroying and ditching and otherwise fixing up, so as to improve the sanitary condition of the mine and at the same time place it in a condition so as to be able to increase the output of coal. At time of Inspector's visit this mine was overcrowded with men, on account of the trouble existing between the miners and the "Big Four"; but in all

my travels I never saw a better spirit manifested among working men than I found here. They were simply dividing their earnings with each other without a murmur, in order to win their fight against the coal companies which would not sign the agreement. When I say dividing their earnings, I mean that in every place in the mine two men were working and only getting out about the usual amount of coal that one man would get were he at work in the place by himself.

After going all through the mine, I interviewed the pit boss and requested him to make a number of improvements which I suggested. This he faithfully promised to do, stating that he was willing to do anything and everything he could in the way of repairs. Mr. Driver, the air man, is a man who has spent the greater part of his life in and around the mines, and thoroughly understands his business, and I have no doubt he could keep the air circulating around the working-faces were he not handicapped by the system the mine is operated on. Two hundred miners, 10 boys, 20 underground day men, 13 overground day men, working 350 days, produced 111,735 tons of coal during the year. DAN MILLER is pit boss.

Mine No. 5 belonging to the same company is located northeast of Weir City and connected with the St. L. & S. F. R. R. I visited this mine August 1. The foreman accompanied me on my expedition of the mine. Started on north-side shaft from air-shaft through air-course; found that it required cleaning at different parts along it. Proceeded to first west at face of this entry, where the air was very weak, the last break-through being 120 feet from face, and repairs to curtains being needed at the mouth of rooms along the entry. In the other entries on this side of the mine the same lack of air existed. On the south side the air was also very weak, especially on first east. I requested Mr. Humble to have a place that was being worked at room width cut down to 12 feet wide, so as to make a more speedy connection for the air, and to avoid smothering those that were depending on this connection. This he ordered done before I left, and the rest of the improvements I had requested to be made he assured me would be attended to at once.

This mine is also run on the single-entry system, and in this case, as in every other where the single-entry system is used, the air is not kept up to the working-face. Another feature of this mine, and one that works hardship on the parties in charge, is the way the coal pitches—it makes it necessary for all work to be done to the raise of the coal. The amount of water to be contended with, and the difficulty of pushing cars up hill, makes it next to impossible to drive any work to the dip. Mr. Humble showed a disposition to do the very best he possibly could under the circumstances. The mine is equipped with a light double hoisting engine, of about thirty horse-power; one steel cylinder boiler, forty inches in diameter and twenty feet long, furnishes steam to run the machinery. Depth of shaft, 45 feet; size of same, 6x16 feet; size of fan, 2½x8 feet. Volume of air at intake registered 15,000 cubic feet per minute. Average thickness of coal, 45 inches. Sixty miners, 3 boys, 9 underground day men, 8 overground day men, working 250 days, produced 45,499 tons of coal during the year. ADAM HUMBLE is pit boss.

Mine No. 5 belonging to Bennett & Crowe, known as "Bennett's slope," is located southwest of Weir City, and connected with the K. C. Ft. S. & M. railroad. A light hoisting engine of about forty horse-power is used to haul coal out of the slope by means of a tail rope. A little engine of about twenty-five horse-power is used as pump and fan engine. Ventilation by fan ten feet in

diameter. The mine is operated on the single-entry system. The volume of air at intake registered 14,500 cubic feet per minute. Yet, with this volume of air going into the mine, I found the air was weak in a great number of places on account of leakage at stoppings and curtains. Two doors also leaked considerable. I called the foreman's attention to the fact that he had a good volume of air going into the mine, and all that was required of him was to have it properly conducted by making his stoppings air-tight, and by paying better attention to the curtains and doors. This he promised to do in the future.

There was another feature in connection with this mine which greatly impaired the condition of the air, viz., the practice of stopping the fan soon after the shot-firers came out of the mine at night and not starting it until the following morning. By doing so the air was shut off about ten hours. The air current being stopped, the gases generated in the mine and considerable of the smoke from the shots that had been fired must necessarily remain therein. Hence the mine was filled with a poisonous atmosphere, which the miners had to breathe for a number of hours every morning, or rather until the fan had been running long enough to dilute or carry off this foul air. I therefore requested the pit boss to see Mr. Bennett and state to him that I desired that a man should be left at the mine during the night to keep the fan running, in order to have the mine cleared of all impurities when the miners started to work in the morning. This he faithfully promised to do. I have been unable to visit the mine since that time, and therefore cannot tell whether this was done or not. But I intend to get around to that mine soon, and if that matter was not adjusted I will endeavor to have it done at once. The vein averages forty-six inches in thickness, and is a good shooting coal. Forty-five miners, 10 boys, 9 underground day men, 6 overground day men, working 278 days, produced 33,298 tons of coal during the year. RICHARD LUKE is mine boss.

Mine No. 1 belonging to J. R. Crowe Coal Company is located at Stippville, three miles north of Columbus, and connected by a switch with the K. C. Ft. S. & M. railroad. There are two openings to this mine, forty-seven feet deep. One is used for hoisting and the other for ventilation and escapement. Size of main shaft, 6 x 8½ feet; size of air-shaft 6 x 6 feet; size of fan, 2½ x 8 feet. Volume of air at intake registered 25,150 feet per minute, fan making 75 revolutions per minute. This mine is operated on the partial double-entry system.

Mine No. 2 belonging to the same company is located one and one-half miles west of Weir City, connected with the St. L. & S. F. railway. This mine is worked on the single-entry system; with the exception of one set of entries, they are driven double. In traveling around this mine, I found the ventilation throughout very good, considering the system. Considerable improvements have been made in the mine during the last year, which the foreman called my attention to, such as grading roads, making better air-courses, and brushing different places to make shorter and better hauling. Twenty-five miners, nearly all white men, were employed at this time. The mine is capable of employing 125 miners, but as this particular mine was involved in the strike, they had to run it with a reduced force of miners. This is what is known as the Jack Wear mine. The manway is partitioned off the main shaft; there was no banister on the stairs; so I left orders with the foreman to have a banister put on from top to bottom. The mine is ventilated by fan fourteen feet in diameter with four wooden blades. Gravity and rotary screens to screen coal. The company reported 110 miners, 19

boys, 13 underground day men, working 174 days, and producing 52,368 tons of coal during the year. JOHN WELSH was pit boss, succeeded later by TOM McCUSKEY.

Mine No. 3 belonging to the same company, located two miles west of Weir City, on a switch of the St. L. & S. F. railway, is a new mine that commenced operation in the fall. I have been unable to visit the underground workings, except to investigate the cause of an accident that took place there in January, 1900, and therefore cannot give a proper description of the mine. Fifty miners, 8 underground day men, 12 overground day men, working 85 days, produced 5240 tons of coal during the year. JAMES EVANS is pit boss.

Mine No. 4 belonging to the same company is located at Stippville, and connected with the K. C. Ft. S. & M. railroad; is also a new mine, which commenced operation about the end of the year. Depth of shaft, 35 feet; size of same, 8x14 feet. This mine gave employment to 30 miners, 6 underground day men, 8 overground day men; worked 36 days and produced 2880 tons of coal during the year. This mine was opened up for the purpose of taking out the southeast corner of the quarter-section of land on which their mine No. 1 is situated. The roof was bad in the places driving towards this corner from their mine No. 1, and the company concluded to sink No. 4 and work narrow places, which would enable them to take out that block of coal with the new mine. J. E. MAXWELL is pit boss.

The Joseph Humble Coal Company mine No. 6 is located one mile north of Turck, and connected by switch with the K. C. Ft. S. & M. railroad. This is also a new mine that was sunk in the beginning of the summer. Depth of shaft, forty feet. When this shaft was first sunk the appearances were very discouraging. It must have been sunk on a fault, as the coal was only fifteen inches in thickness at the bottom of the shaft. But when the entries were driven a little distance away from the bottom, and the mine opened up, a good vein of coal was found, which averaged forty-four inches in thickness and is overlaid with a good black-slate roof. This is the mine at which Mr. William Humble received injuries from fall of slate on September 20 from which he died in a few hours afterwards. The mine is operated at present by horse power, but I expect the company will put in an engine soon to do hoisting. Quite a number of houses have been built close to the mine, along the road leading from Scammon to Columbus. The mine gave employment to 65 miners, 6 boys, 9 underground day men, 9 overground day men; worked 110 days and produced 14,197 tons of coal during the year. WILLIAM HUMBLE is pit boss and JOSEPH HUMBLE superintendent and lessee.

The J. C. Graham Coal Company Mine No. 1, known as "Graham slope," is located one-half mile north of Scammon. A little ten-horse-power engine is used to pull coal from the slope with haulage rope. The coal from the strip pits adjacent to the slope is also taken out with this haulage rope. The air in the mine was rather weak, but they were sinking a second opening, which would be completed in about three days. This would improve the air considerable, as the ventilation at that time was natural, but when the second opening is completed a furnace will be placed in it. The vein here averages 43 inches in thickness. The mine has railroad connections with the K. C. Ft. S. & M. Seventy-five miners, 8 overground day men, working 120 days, produced 12,961 tons of coal during

the year. This includes the strip-pit production and the number of men employed in the pits. A. McALLISTER is foreman. M. L. WALTERS is underground superintendent for all this company's mines.

Mine No. 2 belonging to the same company, known as the "Katy" mine, located northwest of Scammon, is owned by W. S. Norton and leased by J. C. Graham. Size of main shaft, $14 \times 7\frac{1}{2}$; size of air-shaft, 6×8 ; depth, 67 feet. Gravity and shaker screens in use. The third east off the main south was the only entry that was being driven at the time of Inspector's visit; all others had been turned into rooms. The mine was in fair condition, but will soon be worked out. Fifty miners and 12 day men, working 228 days, produced 31,293 tons of coal during the year. WILLIAM SMITH is pit boss.

Mine No. 3 belonging to the J. C. Graham Coal Company, known as the "Blazing Rag," is located in Scammon, a short distance from the K. C. Ft. S. & M. railroad depot. This is a shaft opening, steam power. A little thrashing engine is used for hoisting. At the time of Inspector's visit, all coal produced was hauled with wagons to the railroad-cars on a switch of the K. C. Ft. S. & M. railroad. Since that time I have heard that a switch has been run to the mine, which will save the company the expense of hauling the coal in wagons. This is a new mine, and should have had a good current of air circulating through it, yet upon examination I found the air very weak in most places. The furnace was not properly attended to; the bars on the bottom of the grate were completely choked with clinkers. This injured the good work the furnace should have been doing so much that it scarcely had draft enough to move a light when sitting with it close to the fire. The roadways throughout the mine were wet and muddy, and curtains at the mouth of the rooms were allowed to run down for lack of attention. The mine presented the appearance of being utterly neglected. The foreman stated that he had started to do a lot of ditching, which would carry the water off the roads and keep them dry. He promised to pay careful attention to the furnace and to keep the curtains in repair, and also to put up doors in place of curtains whenever they were required. One hundred miners, 9 underground day men, 9 overground day men, working 252 days, produced 23,042 tons of coal during the year. HARRY CASEBEER is pit boss and M. L. WALTERS underground superintendent.

Mine No. 4 belonging to the same company is located one mile south of Scammon. This mine was idle, making repairs and fixing up a small hoisting engine, when visited. Coal is hauled with wagons to railroad-cars, to a switch of the K. C. Ft. S. & M. R. R. The grading had been done preparatory to putting in a switch to the mine from the Memphis road. I learn this switch has since been put in. The mine is ventilated by furnace. Sixty miners, 5 underground day men, 8 overground day men, working 135 days, produced 11,609 tons of coal during the year. WILLIAM MOODY is pit boss.

Mine No. 5 belonging to the same company is located two and one-half miles north of Scammon and is connected by switch with the K. C. Ft. S. & M. R. R. This is a new mine which was sunk during the summer. It is the intention of the company to operate this mine on a much larger scale than any other of its mines. A large tower has been built, and all the latest improvements to be found around a mine are to be put in at this one.

The Norton Coal Company's mine No. 3 is located three-quarters of a mile west of Scammon, and connected by switch with the K. C. Ft. S. & M. railroad. This is another new mine that was sunk this year. An escapement shaft, 300 feet from the main shaft, has been put down, in conformity with the new escapement-shaft law. Inspector did not visit the underground workings of this mine, as it was not opened up when I visited the mines in that locality. I had an occasion to visit the mine, however, to see if the anti-screen law had been complied with. I noticed that a large and substantial tower had been built. Improvements of all kinds were being made, to place the mine in a condition to handle a good output of coal. The company sent in their report on the blank issued to them for that purpose, which was as follows: 20 miners, 4 underground day men, 3 over-ground day men, working 90 days, produced 2500 tons of coal, valued at \$3250. CAL. WALTERS is pit boss.

On the blank mentioned above there is a space set aside for remarks. The following remarks were written in this space:

"We are now working about forty men, who are above the average in intellect, who are well pleased with their job, and are earning from \$2 to \$8 per day. We have our escapement shaft down and our top scale in. Everything working smoothly. We have heard that there is a strike or boycott going on somewhere in the surrounding country, but, as it has not struck us yet, we take it for granted that those who are 'pushing' it along have not yet discovered that we are in the business. Except for this unfortunate and uncalled-for and unjustifiable contention between employer and employee, every practical coal-miner in and around Scammon might to-day have a bank account of several hundred dollars. I am glad to say that in my judgment the worst of the storm has passed over, and the day is not far distant when the men will recognize as their best friends those who give them employment and pay them fair wages. And I further believe that the time is not far off when a few salaried leaders, who work only with their jaws, will be unable to lead laboring men around by the nose, as they would so many burros by the halters."

A person reading the above might be led to believe that there was no strike in existence in this district, yet I am sorry to say that there is a strike still in progress, and it is directed against the "Big Four" coal companies, and their contemporaries. Let us hope that it will soon end, and result in a victory for the miners.

Mine No. 6 belonging to the Southwestern Coal and Improvement Company is located at Mineral, on a branch of the M. K. & T. railway. Depth of shaft, 126 feet; size of same, 7 x 14 feet; size of air-shaft, 6 x 7 feet. Ventilated by fans 14 feet in diameter with 4-foot blades, fan making 62 revolutions per minute. The mine is equipped with a large double, first-motion engine of about 120 horsepower, for hoisting. This company was also included in what is known as the "Big Four." This mine had been enclosed by a stockade; at the time of the Inspector's visit part of it had been taken down. About 50 miners, 10 day men, were employed at the mine at that time. All the miners were colored men, imported from Southern states to take the place of the striking miners. At the time of my visit to the mine, August 19, these miners were not crowding the market with coal, as a glance at the bulletin showed the average output of the mine to be about sixty tons of mine-run coal per day.

The mine is operated on the double-entry system. The volume of air registered 3400 cubic feet per minute, which was well conducted around the working-faces. The general condition of the mine was good. The number of faults and the enormous size of them have made it an up-hill fight for the parties in charge of this mine to produce coal at anything like a reasonable figure. The main en-

tries are driven north and south, cross-entries east and west. On the south side of the mine, the first, second, third, fourth and seventh east entries have been abandoned on account of fault; and the first, second, third, fourth, sixth and seventh west entries on same side have also been abandoned for the same reason. The main south entry is also stopped, after having been driven about 1000 feet in fault. On the north side of the mine there have only been two entries turned east off the main north. This is because the main north ran 700 feet in fault, when it was stopped. Along the north side close to the bottom, required timbering. A force of men were working at this at the time of my visit.

In going through to inspect the condition of stairway, my attention was attracted by the condition of the passageway leading to the stairway. This was low, and in fact was no fit place for men to be obliged to crawl through to get to the manway. I therefore requested the foreman to have this passageway brushed and timbered from the manway back to the first east on the north side of the shaft, so that men could travel through it in safety. The foreman stated that this place was just the same then as when other Mine Inspectors had visited it, and that they had made no objections to it. I answered that the law was too plain on this point for me to overlook it, and that the passageway would have to be brushed to the height prescribed by law. He finally promised to begin work on it at once. The roadways throughout the mine were in good shape. Forty miners, 2 boys, 9 underground day men, 8 overground day men, working 220 days, produced 51,239 tons of coal during the year. JOHN RYAN is pit boss, H. M. REID, mine superintendent, and IRA FLEMMING general superintendent.

Mine No. 7 belonging to the same company is located east of Mineral, on a branch of the M. K. & T. railroad. This mine is well equipped with first-class machinery; a first-motion double engine of 120 horse-power is used for hoisting. At the time the Inspector visited this mine the miners employed in it were nearly all white men who had been imported from Kentucky and Virginia to take the place of the striking miners. These men were not producing as much coal as the same amount of the former employees of the mine could, as they were strange to the work; many of them had never been in a coal-mine before. This mine is also worked on the double-entry system. Ventilation is first-class. Great care is taken to keep everything in and about the mine in good shape, as this a good field of coal. Cages are protected with covers and safety-catches. One hundred and sixty miners, 6 boys, 17 underground day men, 16 overground day men, working 275 days, produced 118,945 tons of coal during the year. JOS. DAVIDSON is mine boss.

Mine No. 1 belonging to the Eastern Coal and Coke Company is located at Cokedale, on the line of the Missouri Pacific railroad. This is a new mine, and a model mine in every respect, and, should the company meet with the success they deserve after having gone to such expense, as is shown by the giant structure that has been erected, it will be a great benefit to Cherokee county, and especially to the laboring class. For, should this plant be run at its full capacity, I have no doubt that it would employ almost 1000 men. The mine is equipped with a light double hoisting-engine of about thirty-five horse-power. There is a roomy and substantial blacksmith shop with warehouse attached, in which are kept oil, machines, and tools of all kinds that are used in and around mines. Fifty new coke-ovens have been built; only six of these were in use at the time of my visit, on August 16. An engine of about forty horse-power, made at the Erie Engine Works, Erie, Pa., is used to run crushers, washers, and elevators.

The process of washing the coal, preparatory to burning it into coke, is a sight that is rare in the state of Kansas. The coal, after being taken from the mine, is dumped into the crushers, where it is crushed. From there, after going through this process, it is led by means of chutes down into an elevator boot. It is then elevated from this boot by elevator cups to a bin above, then run down chute into the washer. The water used in washing the coal is led by means of a six-inch pipe from a large water-tank placed thirty feet overhead. The coal from the chute and the water from this pipe meet at the head of the washer trough, where the process of washing the coal begins. After being washed, it empties from the washer trough into another elevator boot, and is elevated from there to a large storage bin, the capacity of which is 175 tons. It is taken from this bin by large cars and conveyed to the coke-ovens, where, after burning forty-eight hours, it is removed as coke. The management claims that this coal makes a first-class grade of coke.

After looking over everything on top of the mine, I went below and examined the underground workings of the mine. The double-entry system is used throughout, with break-throughs every forty feet. The mine was ventilated by means of furnace at that time, but a large air-shaft was down 400 feet from the main shaft and connections were being driven to it, and the company intend to place a large fan over this air-shaft to ventilate the mine. This is what is called the top or first vein, and while it may be a good coal for making coke, the appearance of the mine at that time was not very encouraging as far as operating it at a profit to the owners was concerned. The coal seemed to lie in pockets; the vein ranging from eight inches to forty inches in thickness, and in fact in some places the coal ran out entirely. Nearly all the miners employed were working by the yard at a stated price. The condition of the mine in general was good, with the exception of two or three places. In these the air was rather weak, on account of connections not being driven up. An average of 35 miners, 5 underground day men, 5 overground day men, working 150 days, produced 2100 tons of coal during the year. A glance at the above returns will show that the 35 miners, working 150 days, with the production given, places the average production of each miner at 800 pounds of coal per day. This low average is easily accounted for when it is known that in a great many of the places in which the miners worked the coal had run down to five or six inches thick, and in others there was no coal at all, JAS. EWART is pit boss.

Mine No. 1 belonging to Mrs. D. Edwards, and leased by John McGregor, Wright Shaw, and John Warstler, is located about one-fourth mile east of the Crowe Coal Company mine No. 1 at Stippville. This mine was sunk and operated by Daniel Edwards until he died, on June 19. When I visited the mine, the above-named lessees were at work taking out water and fixing up the mine preparatory to getting out coal. This is a gin-power shaft, with no railroad connections. It worked a few months out of the year, but the lessees did not send in a report of the amount of coal produced.

Mine No. 1 leased by Stone & Dickson is a gin-power shaft opening, located one-half mile north of Scammon, on a switch of the K. C. Ft. S. & M. railway. Depth of shaft, 23 feet; size of shaft, 16x6 feet. This is a new shaft, which at time of visit was only being opened out from the bottom. The two lessees were the only ones working in it at that time. They did not send in a report of the amount produced at the mine during year.

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The Hamilton & Braidwood mine No. 1 is located about one mile northwest of Weir City and connected by switch with the K. C. Ft. S. & M. R. R. There are two shaft openings; one is used for hoisting and the other for ventilation and escapement. The mine is equipped with good machinery. Mechanical ventilation, by fan 14 feet in diameter with 4-foot blades. Two visits were made to this mine during the year. It is operated on what is called the partial double-entry system. At the time of my first visit, September 2, the air was rather weak at the face of a great many of the rooms and entries. Two doors were needed where curtains were being used. The airway leading from the fifth west to the sixth west on the north side of mine was partially filled with dirt and slate. The foreman promised to have the doors put up and the airway cleaned out at once. On account of the strike against the "Big Four," this mine was overcrowded with miners. Many were working double and far ahead of any air. Places were being worked that under ordinary circumstances would have been abandoned, as it would have been hard to get miners to work in them had all the companies in the district been on good terms with their men. Connections for air were being pushed as rapidly as possible, however. The foreman and air man were working hard to make the condition of the mine as favorable as possible. The foreman stated that the south side of the mine would be worked out inside of a year. One hundred and fifty miners and eleven drivers were employed at the mine at that time.

In about two weeks after visiting this mine I was notified that several men who were working in it were suffering on account of bad air, and I was requested to go and examine the mine and have the matter remedied. I went there on September 18, the day after receiving the communication, and upon investigation found the statement was true. I went to the face of the main north entry, and there found a good current of air circulating, but when I went into the rooms turned off this entry I could scarcely see anything for smoke. I traveled all around those rooms looking for the cause of the lack of air circulation. I finally found a cross-cut through which the air had to pass in making its circuit, which cross-cut was caved almost tight and only allowed a small portion of air to pass through. There were five rooms below this point, and all of them depended for air on whatever came through this cross-cut. The result was they got very little, if any, air. I made known the cause of the trouble to the men working in those rooms, and told them that I would see that it was remedied. I also requested them to oblige me by letting me know in case it was not. I then went out to the bottom and found the foreman, stated the object of my visit and the condition of affairs in the rooms off the main north entry, and requested him to have the matter attended to immediately. He stated that he was not aware of the condition of this cross-cut or he would have attended to it sooner, and promised faithfully to see that it was cleaned out and put in shape at once. I learned soon afterward that this had been done, and it had accomplished the desired effect. I have had no complaints from this mine since. One hundred and thirty miners, 10 boys, 15 underground day men, 13 overground day men, working 275 days, produced 77,405 tons of coal during the year. STEWART HAMILTON is pit boss.

Jenkins Coal Company mine No. 1, known as the James Hall mine, is located about one-half mile south of the Central Coal and Coke Company's No. 11; depth of shaft, 40 feet; size, 6x14 feet. Mine has no railroad connections; coal is hauled in wagons to railroad-cars on Memphis switch. Six miners and 1 pusher, working 240 days, produced 4240 tons of coal during the year. HENRY JENKINS is pit boss.

The L. S. Myers mine is a horse-power, located northeast of Weir City. When I visited this mine the management were busy making improvements around the mine and grading the roadways from the bottom along the main entry. Twenty miners, 3 underground day men, 2 overground day men, working 160 days, produced 7721.6 tons of coal during the year. DAVE MYERS is pit boss.

Pat Harman operated a little slope southeast of Weir City about two months during the year and produced 200 tons of coal.

Dave Scranton operated large strip pits southeast of Weir City, which gave employment to 4 coal-raisers, 12 men and teams, and 2 day men, who worked 248 days and produced 43,161 tons of coal; \$2.50 is paid for man and team and \$1.50 per day for day men.

OSAGE COUNTY.

THIS county is the fourth largest coal-producing county in the state. All the coal-mines in the county worked an average of 149 days during the year 1899, employed 1376 men and 45 boys, and produced 260,803 $\frac{1}{2}$ tons of coal, valued at \$493,011.38 $\frac{3}{4}$. This shows an increase of 81,743 $\frac{1}{2}$ tons over the production of 1898. There are, in all, seventy-six openings for coal operated in the county, including shafts, drifts, slopes, and strip pits. The thickness of the vein varies according to its location, as follows: In Arvonnia, Quenemo and Rosemont the vein averages twelve inches; around Osage City and Peter-ton the average is thirteen inches; at Burlingame and Fosterville the average is seventeen inches; and in Scranton and Carbondale twenty inches is the average thickness. The mines in this county are all worked on the long-wall system, and they are nearly all ventilated by means of a furnace. In a few of them the ventilation is natural. The miners' earnings, as shown by the returns, compare favorably with those of any other county in the state. This was due to the remarkable briskness of the trade, an advance of twenty-five cents per ton for mining during the latter part of the year. One feature of the Osage county coal-mining which I am pleased to note is the small number of accidents which have occurred during the year; only three men were injured. This would indicate that the long-wall method is by far the safest way of coal-mining. The Mount Carmel Coal Company's mines produced forty-eight per cent. of the total production of this county. Forty-eight per cent. is produced by small operators, and the other four per cent. is produced by a co-operative body of miners known as the "Labor Exchange." Some idea of the advantage of their method may be gathered by the following incident:

In the past year coal sold as high as \$4.50 per ton to the consumer in Topeka. The Labor Exchange of Osage City and Burlingame, through their economical management, the result of the cooperative system under which they work, were able to place their coal on this market at a greatly reduced figure. The coal companies immediately protested against this action of the Labor Exchange, and appealed to the miners' unions to prevail on the exchange to sell at the prices established by the coal companies, claiming that, as they had made concessions to the miners, paying them an advance of twenty-five cents per ton for mining, it was necessary for the miners to sustain the companies in keeping up the selling price of coal. The miners' unions accordingly appointed committees to wait on the officers of

the Labor Exchange, and requested them to raise the selling price of their coal. The exchange people refused to comply with this request, and in justification of their position offered the following explanation :

1. That by selling direct to the consumer, instead of the coal passing through the hands of the middleman, the consumer obtained his coal at greatly reduced rates, thus dispensing with the enormous profits that usually went to the middleman.

2. That they were paying their miners as high a price per ton for mining as prevailed in the district, and that, therefore, there was no just grounds for complaint.

They finally convinced the union committees that their request was not justifiable and the matter was allowed to drop.

No blame can be attached to the Labor Exchange for selling direct to the consumer instead of the middleman or jobber, as the coal companies were doing, for the reason that the jobber seems to control the market in Topeka. The jobber may buy the coal at a reasonable rate, at about two dollars per ton at the mine, and by the time it reaches the consumer the price is usually doubled, and most of the citizens are led to believe that this increase in price is caused by the demands of the miners which have to be met, and all kinds of opprobrium is heaped on the insatiable (?) coal-miner.

Should the Labor Exchange succeed in throwing the middleman out of a job it will deserve the thanks of the citizens of Topeka and of the coal-miners as well, as it will dispel the erroneous idea in the minds of the public that the miners are paid an advance in proportion to every advance made in the selling price of coal.

The Labor Exchange is a body of working men who are organized for the purpose of bettering their condition. They are endeavoring to materialize what has heretofore been an idea only, that of giving to labor the full share of its product. All are workers in this body. There are no drones in this hive; no high-salaried officers; no great man at the top to seize the lion's share and dole out a pittance to labor, as though he was bestowing it in charity. All are paid equal to the standard wage of the county, according to the work they are engaged in, and all share equally in the profits. The idea is a beautiful one, and cannot fail of success if properly directed. But let them beware that the spirit of competition does not divert them from their purpose, and leave their members worse off than at the beginning of their cooperative efforts. Let them not put coal on the market one cent less than at the selling price of their competitors, simply because they can do so and make as good wages as their brother miners who work for a corporation. They are not organized simply to make

the same wages. They are there to make better wages; to get the full value of their labor. They are there to show the world what organized cooperative ownership can do for working men. Let the profits of their plan revert where they rightfully belong—to the members of their association. Let the record of their daily earnings show a material increase, rather than that the benefits of their efforts be given to the indifferent and sometimes antagonistic consumer. See tables on pages 52, 53, 54, and 55.

RECORD OF INSPECTION.

Mount Carmel Coal Company's mine No. 10, located at Scranton and connected by switch with the A. T. & S. F. railway, is a horse-power shaft, 67 feet deep, which has been in operation twelve years. This mine, like all others in Osage county, is worked on the long-wall system. The ventilation is by means of a furnace, the total volume of air going into the mine registering 5980 cubic feet per minute. This volume, although well conducted, was inadequate to meet the demand of the 100 men and 3 mules that were working in the mine. The main entries run north and south, cross-entries east and west. The fourth, fifth and sixth east off south, the second, third, fourth, fifth, sixth and seventh east off north, and fifth, sixth and seventh west off north, were all worked out; in fact, all of the west off south side has been abandoned on account of thin coal and sulphur top. The air was rather weak on the south side on account of the return air-course being low, narrow, and almost full of water. The foreman said he would remedy this as soon as possible, by drawing the water off and increasing the size of the air-course. At the time of the Inspector's visit the sixth east on the north side of the mine was within 50 feet of being through on mine No. 12 belonging to the same company. Stairway partitioned off main shaft served as an escapement shaft. Ninety-five miners, 5 boys and 9 day men worked 255 days, and produced 32,160.5 tons of coal during the year. THOMAS ELWOOD is pit boss. ROBERT CRAIG is superintendent for all this company's mines in Osage county.

Mine No. 12 belonging to the same company is located north of Scranton and connected by switch with the Atchison, Topeka & Santa Fe railway. The same description applies to this mine that applies to mine No. 10, with the exception of the depth. This shaft is 40 feet deep and 5 x 14 in size. The main entries run east and west from the bottom. The volume of air passing through the mine registered 6550 cubic feet per minute. One hundred and fifteen miners, 8 day men below, 3 day men on top, were working at this mine when visited by the Inspector. The ventilation of the mine was good, except in the places where the miners get the last of the air on its return. In these places the air was weak and charged with black damp. On the east side of shaft the roads were very wet and muddy, especially in the sixth and seventh south. Two men were kept busy all the time pushing water. One hundred miners, 4 boys, 12 day men, working 262 days, produced 37,506 $\frac{2}{10}$ tons of coal during the year. ANDREW ANDREEN is pit boss.

Mine No. 14 belonging to the same company is located half-mile south of Peterton depot, on a switch of the Atchison, Topeka & Santa Fe railway. This

is a new mine which had just been sunk to the coal when Inspector visited there on September 6. It gave employment to 16 miners, 2 underground day men, 2 overground day men, 72 days, and produced 2055 $\frac{7}{10}$ tons of coal during the year. JOHN O'MELIA is pit boss.

Mine No. 23 of the same company, located 1 $\frac{1}{2}$ miles northeast of Atchison, Topeka & Santa Fe depot, at Osage City, on a switch of Atchison, Topeka & Santa Fe railway, was worked out and abandoned in April. The company reported 43 miners, 2 boys and 2 day men having worked 50 days, and produced 3902 tons of coal during the year. EMIL THYS is pit boss.

Mine No. 24 belonging to the same company, located northeast of Osage City, and connected by switch with the Atchison, Topeka & Santa Fe railway, is a horse-power, and has been in operation twelve years. At the time the Inspector first visited this mine, on September 14, it gave employment to 100 miners, 2 underground day men, 2 overground day men; stairway partitioned off main or hoisting shaft. Ventilated by furnace. This mine has an undercast, and the system of ventilation was originally on modern improved principles, the air going to the face of the main east and west, where it divided, going north and south, thus creating four separate currents. At the time I visited the mine, however, this undercast was rendered useless on account of the coal on the north side of the shaft being worked out. The air is now conducted to the face of the east and west main entries as before, but it all has to return by way of the first north to the furnace. As a consequence of this, the air, although clear, was very light. I insisted on a separate return being opened up on the west side. This the foreman promised to do.

Complaints being sent to me in regard to the ventilation of the mine, I made my second visit to it on October 13. On examination, I found the air-course nearly closed on the first north entry on the west side of the mine. As that was the only means of return (for the air) on the west side, it left a very poor supply of air for the miners on that side of the shaft. I had the pit boss change the course of the air. Instead of sending it from the shaft bottom into the main west entry as far the fifth north and around to the second west, all of which is old and abandoned work, I had him take the door off the first north entry, and close the main west entry between the first and second north entries. Then the curtains had to be taken off the second west entry and placed on the mouth of the rooms along this entry. When these changes had been made, the air went straight from the bottom up the first north entry, and into the fourth room on second west, thus giving the miners the benefit of the shorter course, and at the same time a pure current of air direct from the bottom of the shaft. I have heard no complaints from this mine since that time. Ninety-five miners and five day men, working 221 days, produced 23,980 $\frac{1}{10}$ tons of coal during the year. GEO. L. THOMSON is pit boss.

Mine No. 27 belonging to the same company, located one mile south of Osage City, on Ninth street, and connected by switch with the Atchison, Topeka & Santa Fe railway, is a shaft opening, forty-four feet deep, and, like mine No. 24, has also been in operation twelve years. This mine had also been provided with an undercast, the air being originally divided into four separate currents at the face of the north and south entries, returning on the west side through regular air-course direct to furnace, and on east side it was conducted through undercast to furnace. The coal on the east side of the shaft was all worked out at the

OSAGE COUNTY COAL-MINES.

Office No.	Name of operator or company.	Post-office address.	Name or number of mine.	Name of pit boss or underground foreman.	Location of mine.	Has mine railroad connection?	Name of railway.	Kind of opening....
1	Mount Carmel Coal Company	Topeka.....	10	Thomas Elwood	Scranton	Yes.	Santa Fe	Shaft.
2	"	"	12	Andrew Andreen	North of Scranton.	"	"	"
3	"	"	23	Emil Thys.	Northeast of Osage City.	"	"	"
4	"	"	27	Geo. L. Thomson	Southeast of Osage City.	"	"	"
5	"	"	24	James Main	Northeast of Osage City.	"	"	"
6	"	"	26	Archie Craig	Southeast of Peterton.	"	"	"
7	"	"	28	John O' Mella	South of Peterton.	"	"	"
8	"	"	29	John O' Mella	Northeast of Osage City.	"	"	"
9	Western Fuel Company	Osage City	14	Robert Hughes	East of Osage City.	"	Mo. Pac.	"
10	"	"	2	Peter Forsberg.	North of Osage City	"	"	"
11	"	"	4	Turner Grosvenor	Southeast of Osage City	"	"	"
12	"	"	5	Eric Fellman	South of Burlingame	"	"	"
13	Labor Exchange, Branch 223	"	1	Colin Wilson	Southeast of Osage City	No.	Santa Fe	"
14	William Petersen.	"	2	William Petersen	East of Osage City	Yes.	"	"
15	Murry Bros.	"	1	John Murry	West of Osage City	No.	"	"
16	S. J. Carlson.	"	4	Fred Spain	"	"	"	"
17	"	"	5	S. J. Carlson	"	"	"	"
18	"	"	1	Peter Lind	"	"	"	"
19	John A. Johnson	"	1	Ed. Clift	"	Yes.	Mo. Pac.	"
20	Kansas Coal Company	"	1	C. E. Stoncrist.	Southwest of Osage City	"	"	"
21	A. W. Granstrom.	"	5	C. Andersen	Northwest of Osage City	No.	"	"
22	"	"	6	Matthew Waddell	Osage City	"	"	"
23	Matthew Waddell	"	1	Isaiah Jones	Southeast of Scranton	Yes.	Santa Fe	"
24	Isaiah Jones.	"	1	M. W. Ryan	East of Burlingame.	"	"	"
25	Ryan & Co.	Scranton	3	Geo. Chappell	South of Scranton	No.	"	"
26	Thomas Chappell	"	4	John Goblar	Southeast of Scranton	"	"	"
27	"	"	4	Samuel Noble	Southwest of Scranton	"	"	"
28	Thos. Noble & Sons	"	1	Jas. Taylor	Scranton	Yes.	Santa Fe	"
29	Jas. Taylor	"	1	Jas. Cathcart	Northeast of Burlingame.	"	"	"
30	Jas. Cathcart.	"	1	Thos. Whitcombe	East of Burlingame.	"	"	"
31	Henry Isaacs	"	1	Wm. Foster	Burlingame	"	"	"
32	Thos. Whitcombe	Burlingame	1	John Bell	"	"	"	"
33	Wm. Foster	"	1	Charles Rushford	"	"	"	"
34	John Bell	"	3	Neal Hotchkiss	"	No.	"	"
35	John D. Jack	"	1	Robert Simpson	"	Yes.	Santa Fe	"
36	Hotchkiss Coal and Mining Company	"	1	Wm. Paterson	East of Burlingame.	No.	"	"
37	Robert Simpson	"	4	Hugh McFarlane	"	Yes.	Santa Fe	"
38	Robt. Paterson	"	1	J. G. Foster	"	"	"	"
39	Hugh McFarlane	"	5	Robt. Jack	South of Burlingame	Yes.	"	"
40	Panzer Long-wall Mining Mach. Co.	"	1	"	"	No.	"	"
41	Central Coal and Mining Company.	"	1	"	"	"	"	"

42	Sunflower Coal Company	Osage City	1	Larse Olson	East of Osage City	No.	Drift.
43	Bellville Coal Company	Seranton	*	Newlands Ingham	West of Seranton	"	"
44	William Menzies	"	1	Wm. Menzies	South of Seranton	"	"
45	J. C. Harvey	Peterson	1	Wm. Harvey	Northeast of Peterson	Yes	Santa Fe
46	Coughlin Coal Company	"	2	Michael Coughlin	"	"	"
47	Warren Bros.	Rosemont	1	Warren	Northeast of Rosemont	No.	Drift.
48	Martin Coal Company	Seranton	1	Wm. McNutt	East of Seranton	"	Drift.
49	R. M. Buntin	"	1	N. Incham	Southwest of Seranton	"	Slope.
50	John McKeen	Rosemont	1	John McKeen	East of Rosemont	"	Drift.
51	N. M. Thomas	"	1	N. M. Thomas	Southeast of Rosemont	"	"
52	Wm. Redicker	"	1	Wm. Redicker	North of Rosemont	"	"
53	Lewis Evans	Arvonnia	1	Lewis Evans	North of Arvonnia	"	"
54	John Lewis	"	1	Ferguson Lewis	South of Arvonnia	"	"
55	F. M. Moore	"	1	F. M. Moore	Arvonnia	"	Strip.
56	J. T. Evans	"	56	J. T. Evans	"	"	"
57	Wm. Jeremy	"	57	Wm. Jeremy	"	"	"
58	James King	"	58	James King	"	"	"
59	Jos. Bruce, Jr.	"	59	Jos. Bruce, Jr.	"	"	"
60	Grant Fine	Quenemo	1	A. M. Service, lessee.	Southeast of Quenemo	"	Drift.
61	Ran Cade	"	1	John Smith, lessee.	South of Quenemo	"	"
62	M. C. Barrett	"	1	M. C. Barrett	Southwest of Quenemo	"	"
63	Mrs. Peter Hyleman	"	1	G. W. Wildin	"	"	"
64	G. W. Wildin	"	1	A. Herndon	South of Quenemo	"	"
65	Amos Herndon	"	1	Barney Scott	East of Carbondale	"	"
66	Barney Scott	Carbondale	1	"	"	"	Strip.
67	"	"	"	Hugh Hartman	"	"	"
68	"	"	"	Chas. Browning	"	"	"
69	Charles Browning	"	"	James Newell	"	"	"
70	James Newell	"	"	"	Southeast of Carbondale	"	"
71	James Ramey	"	"	James Ramey	"	"	"
72	Charles Shively	"	"	Chas. Shively	"	"	"
73	"	"	"	"	"	"	"
74	Jos. Johnson	"	1	Jos. Johnson	"	"	Drift.
75	John Coughlin	Seranton	"	John Coughlin	Seranton	"	Strip.
76	Harry Thomas	"	"	Harry Thomas	"	"	"

* Bell Brothers.

INSPECTOR OF COAL-MINES.

OSAGE COUNTY COAL-MINES — CONCLUDED.

Office No.	Kind of power used	Tons of coal produced (2000 pounds to the ton).			Average number of miners.	Average number of boys.	Average number of day hands.	Average number of employees.	Av. paid per ton for mining.		Av. selling price at mine.		Estimated value of output.	Casualties.		Average wages paid day men under ground. .	Average wages paid day men above ground. .	Number of kegs of powder used during year.	Remarks.
		Lump ..	Nut and slack. .	Mine run ...					Lump ..	Mine run ...	Lump ..	Mine run ...		Killed ..	Injured. .				
1	Horse,	32,160.5	.....	.....	95	5	9	109	\$1 17½	.....	\$1 70	.....	\$54,672 85	.....	1	\$2 25	\$1 75	.....	Abandoned in April.
2	"	37,506.8	.....	.....	100	4	12	116	1 17½	.....	1 70	.....	63,761 56	.....	.....	2 25	1 75	.....	"
3	"	3,902.9	.....	.....	43	5	5	47	1 37½	.....	1 90	.....	7,415 51	.....	.....	2 25	1 80	.....	New mine.
4	"	23,980.9	.....	.....	95	3	2	105	1 37½	.....	1 90	.....	45,563 71	.....	.....	2 25	1 75	.....	"
5	"	14,132	.....	.....	60	4	3	67	1 37½	.....	1 90	.....	26,850 80	.....	.....	2 25	1 75	.....	"
6	"	4,891	.....	.....	34	.....	3	37	1 37½	.....	1 90	.....	9,292 90	.....	.....	2 25	1 75	.....	"
7	"	2,687.3	.....	.....	45	3	4	37	1 37½	.....	1 70	.....	5,105 87	.....	.....	2 25	1 75	.....	"
8	"	2,055.7	.....	.....	12	.....	2	20	1 17½	.....	2 20	.....	3,494 69	.....	.....	2 25	1 75	.....	New; opened in Aug.
9	"	5,950	.....	.....	200	3	3	36	1 37½	.....	2 20	.....	13,090 00	.....	.....	2 25	1 75	.....	New; opened in Oct.
10	"	2,406	.....	.....	80	.....	2	17	1 37½	.....	2 20	.....	2,293 20	.....	.....	2 25	1 75	.....	"
11	"	6,699	.....	.....	15	.....	2	52	1 50	.....	2 20	.....	2,010 80	.....	.....	2 25	1 75	.....	"
12	"	6,305.5	.....	.....	50	.....	2	43	1 37½	.....	2 20	.....	14,737 80	.....	.....	2 25	1 75	.....	"
13	"	185	.....	.....	36	1	6	43	1 37½	.....	2 05	.....	12,926 27	.....	.....	2 25	1 75	.....	"
14	"	3,100	.....	.....	22	.....	3	25	1 37½	.....	1 85	.....	5,735 00	.....	.....	2 25	1 75	.....	"
15	"	384	.....	.....	120	.....	3	.....	1 37½	.....	1 90	.....	729 60	.....	.....	1 50	1 25	(a)	"
16	"	1,575	.....	.....	240	.....	2	8	1 37½	.....	2 00	.....	3,150 00	.....	.....	2 25	1 75	.....	"
17	"	6,305	.....	.....	205	5	6	31	1 37½	.....	2 00	.....	12,610 00	.....	.....	2 25	1 75	.....	"
18	"	1,300	.....	.....	100	12	4	16	1 37½	.....	2 25	.....	2,925 00	.....	.....	2 25	1 75	.....	New mine.
19	"	2,434	.....	.....	200	10	.....	.....	1 37½	.....	2 25	.....	5,354 80	.....	.....	2 00	1 50	.....	"
20	"	6,890.5	.....	.....	260	25	3	27	1 37½	.....	1 99½	.....	13,746 54	.....	.....	2 25	1 90	.....	"
21	"	8,434	.....	.....	151	36	2	39	1 37½	.....	1 97½	.....	16,657 15	.....	.....	2 25	2 00	.....	"
22	"	1,737	.....	.....	125	10	1	11	1 37½	.....	2 30	.....	3,430 57	.....	.....	2 00	2 00	(b)	"
23	"	980	.....	.....	250	5	1	6	1 37½	.....	2 00	.....	2,254 00	.....	.....	2 00	1 50	.....	"
24	"	600	.....	.....	120	6	1	7	1 37½	.....	2 00	.....	1,200 00	.....	.....	2 00	1 50	.....	"
25	"	5,507	.....	.....	193	25	3	28	1 17½	.....	1 85	.....	10,187 95	.....	.....	2 10	2 00	.....	"
26	"	9,262	.....	.....	240	27	4	31	1 22½	.....	1 82	.....	16,856 84	.....	.....	2 00	2 00	.....	"
27	"	4,198	.....	.....	144	18	3	21	1 12½	.....	1 85	.....	7,766 30	.....	.....	2 00	1 75	.....	"
28	"	1,268	.....	.....	280	9	3	12	1 12½	.....	1 87	.....	2,371 16	.....	.....	2 50	2 25	.....	"
29	"	1,692	.....	.....	225	9	1	11	1 22½	.....	2 25	.....	3,807 00	.....	.....	2 00	2 00	.....	"
30	"	100	.....	.....	56	1	1	1	1 17½	.....	2 00	.....	200 00	.....	.....	2 50	2 25	.....	"
31	"	5,000	.....	.....	245	15	2	17	1 22½	.....	1 90	.....	9,500 00	.....	.....	2 00	2 00	.....	"
32	"	2,150	.....	.....	210	15	2	27	1 22½	.....	2 25	.....	4,837 50	.....	.....	2 50	1 75	.....	"
33	"	3,611	.....	.....	250	15	3	18	1 22½	.....	1 90	.....	6,880 90	.....	.....	2 00	1 35	.....	"
34	"	3,992	.....	.....	230	15	3	18	1 22½	.....	1 75	.....	6,986 00	.....	.....	2 00	2 00	9	"
35	"	7,400	.....	.....	290	22	4	26	1 22½	.....	2 00	.....	14,800 00	.....	.....	2 00	1 35	.....	"
36	"	4,000	.....	.....	250	16	4	26	1 10	.....	1 75	.....	7,000 00	.....	.....	2 00	1 25	.....	"
37	"	3,300	.....	.....	220	14	2	16	1 22½	.....	1 85	.....	6,105 00	.....	.....	2 00	1 25	.....	"
38	"	120	.....	.....	95	2	.....	20	1 22½	.....	1 95	.....	234 00	.....	.....	1 90	1 35	.....	"
39	"	3,500	.....	.....	210	.....	2	.....	1 22½	.....	1 90	.....	6,650 00	.....	.....	1 90	1 35	5	"

40	Horse,	2,648	150	26	...	3	29	1 22½	2 35	6,222 80	1	2 25	1 75	3
41	"	2,157	175	8	2	2	12	1 22½	2 00	4,314 00	...	2 00	1 00	...
42	"	2,796	300	9	...	1	10	1 37½	2 00	5,392 00	...	2 25	1 50	...
43	"	1,918.5	93	22	...	5	27	1 00	1 60	3,069 60	...	2 25	1 50	...
44	"	500	160	3	...	...	1	1 35	2 25	1,125 00	...	2 00	1 50	...
45	"	2,900	140	20	3	2	25	1 42½	2 00	5,800 00	...	2 25	1 50	...
46	"	5,636	225	35	4	2	41	1 30	2 00	11,272 00	...	2 25	1 50	...
47	Man...	480	305	4	...	...	3	1 75	1 60	1,080 00	...	2 25	1 50	...
48	Horse,	292	95	3	...	2	4	1 00	2 00	467 20	...	2 50	1 50	...
49	Steam,	158	70	2	...	2	2	1 62½	2 00	316 00	...	2 50	1 50	...
50	Man...	146	97	2	...	...	2	1 62½	2 00	292 00	...	...	...	...
51	"	156	104	2	...	...	2	1 62½	2 00	312 00	...	...	...	...
52	"	315	140	3	...	...	3	1 62½	2 00	630 00	...	...	...	...
53	"	120	60	4	1	1	5	1 62½	2 00	240 00	...	...	...	...
54	"	120	60	4	...	...	4	1 62½	2 00	240 00	...	...	...	...
55	Horse,	120	40	...	...	4	4	...	1 75	210 00	...	...	1 00	...
56	"	200	55	...	...	4	4	...	1 75	350 00	...	...	1 25	...
57	"	160	53	...	...	3	3	...	1 75	280 00	...	...	1 30	...
58	"	150	60	...	...	3	3	...	1 75	262 50	...	...	1 25	...
59	"	140	70	...	...	2	2	...	1 75	245 00	...	...	...	...
60	Man...	40	35	2	...	2	2	1 50	2 00	80 00	...	...	...	...
61	"	35	40	1	...	1	1	...	2 00	70 00	...	...	...	...
62	"	85	70	2	...	2	2	...	2 00	170 00	...	...	...	...
63	"	105	120	1	...	1	1	1 75	2 00	210 00	...	...	...	...
64	"	425	190	4	...	1	5	...	2 00	850 00	...	...	1 50	...
65	"	200	95	3	...	...	3	...	2 00	400 00	...	...	...	...
66	Horse,	540	180	4	...	1	5	1 17½	2 00	1,080 00	...	...	1 50	...
67	"	485	97	...	...	5	5	...	2 00	970 00	...	...	1 25	...
68	"	398	98	...	...	5	4	...	2 00	796 00	...	...	1 30	...
69	"	963.2	161	...	...	6	6	...	2 00	1,926 40	...	...	1 30	...
70	"	552	110	...	...	5	5	...	2 00	1,104 00	...	...	1 30	...
71	"	1,140	190	...	...	6	6	...	2 00	2,280 00	...	...	1 30	...
72	"	612	153	...	...	4	4	...	2 00	1,224 00	...	...	1 30	...
73	"	646	161	4	...	1	5	...	2 00	1,292 00	...	...	1 50	...
74	"	406	100	...	...	4	4	...	2 00	812 00	...	...	1 30	...
75	"	320	80	...	...	4	4	...	2 00	640 00	...	...	1 30	...
76	"	308	65	...	...	5	5	...	2 00	616 00	...	...	1 30	...
		260,803.81	11,356	1,182	45	194	1,421	...	...	\$493,011 37	3	...	...	...

time of Inspector's visit to this mine. Therefore, the undercast could not be used as a means of ventilation. This caused the air to be very weak, and besides, it was charged with carbonic-acid gas (black damp) from the old workings of mine No. 22, which are contiguous to this mine. Sixty miners, 4 boys and 3 day men worked 223 days, and produced 14,132 tons of coal. JAMES MAIN is pit boss.

Mine No. 28 belonging to the same company, located two miles northeast of Osage City, is a new shaft, having been sunk to the coal in the month of August. Depth of shaft, 21 feet; size, $5\frac{1}{2} \times 14$ feet. When I visited there, on September 17, the mine gave employment to twelve men. There was no railroad switch laid to this mine at that time. I learn a switch has since been put in. Stairway partitioned off main or hoisting shaft served as an escapement. Thirty miners, 2 day men, worked 69 days, and produced 4891 tons of coal. A. CRAIG is pit boss.

Mine No. 29 of the same company, located one-half mile southeast of the Atchison, Topeka & Santa Fe depot at Peterton, and connected by switch with the Atchison, Topeka & Santa Fe railway, is a new mine that was sunk in the latter part of September. Depth of shaft, 30 feet; size of same, 5×14 feet. As this mine was not in operation at the time of my visit to that locality, I am unable to give a detailed report of it. The company reported 34 miners, 3 day men, working 45 days, and producing 2687 tons of coal. JOHN O'MELIA, is pit boss.

The Ryan Company's mine No. 3, owned by Pat. Ryan, is a horse-power shaft, located one-half mile northeast of Scranton, on a switch of the Atchison, Topeka & Santa Fe railway. There are three openings, forty feet deep. Ventilated by furnace. The total volume of air going into the mine registered 1250 cubic feet per minute. This volume could be increased, but, as there were only twelve men working in the mine at the time I visited it, the amount of air circulating was sufficient to meet their requirements. Ryan is the most popular of the small operators in this vicinity on account of his promptitude in paying his men on time. This, I am sorry to say, cannot be said of all the small operators. Mr. Ryan also gave his men an advance of ten cents per ton about the time I was there. The condition of the mine in general was good. It worked 189 days and gave employment to 25 miners, 3 day men, and produced 5507 tons of coal during the year. M. W. RYAN is pit boss.

The Thomas Noble mine, located $1\frac{1}{2}$ miles southeast of Scranton, is a horse-power shaft opening, 34 feet deep; manway in main shaft. Ventilation is by means of a furnace, which was producing fair results. Timbers were required along the bottom to make it secure. The management promised to put these in at once. All coal produced is sold to supply local trade. Nine miners, 3 day men, worked 290 days, and produced 1260 tons of coal during the year. SAMUEL NOBLE is pit boss.

The James Taylor mine, located two miles southeast of Scranton, on a switch of the Atchison, Topeka & Santa Fe railway, is a horse-power shaft which has been in operation seven years. The ventilation, which is by means of a furnace, was fair. Main entries run north and south. South side has been abandoned on account of too much water. This mine gave employment to 9 miners, 1 boy, and 1 day man, and produced 1692 tons of coal, working 225 days during the year. JOHN GOEBEL is pit boss.

The James Cathcart mine is located at Scranton. When I visited this mine there was no one working in it except Mr. Cathcart himself, and he said if he could get the rails out of it he would abandon it. The large amount of water to be contended with made it quite an up-hill job to run the mine. He had a six-horse-power steam-pump at work trying to overcome the water. He reported having worked 56 days and produced 100 tons of coal.

Robert Elliott mine, located four miles southwest of Scranton, is a new mine, and at the time of my visit had only been in operation about two months. No air-shaft had been sunk; ventilation was natural.

The Thomas Whitcombe mine is located four miles southwest of Scranton, and connected by switch of the A. T. & S. F. Rly. Depth of shaft, 90 feet; size, 6x10. This is a horse-power shaft, which has been in operation eight years. The vein averages eighteen inches in thickness. The ventilation of the mine was good. Roadways dry, wide, and in good condition. Fifteen miners, 2 day men, worked 210 days, and produced 2150 tons of coal during the year. THOMAS WHITCOMBE is pit boss.

The William Foster mine, located four and one-half miles southwest of Scranton, on a switch of the A. T. & S. F. Rly., is a horse-power shaft opening and has been in operation twelve years. Main entries run north and south. Mine is ventilated by furnace, the air being fairly well conducted. Roadways dry and in good condition. The north side of the mine is worked out to the boundary line. Fifteen miners, 3 day men, worked 250 days, and produced 2611 tons of coal during the year. FRANK FOSTER is pit boss.

The John Bell mine, located four miles southwest of Scranton, on a switch of the A. T. & S. R. R., is a comparatively new shaft, as it has only been in operation about a year. Depth of main shaft, 90 feet; size of same, 5x12 feet. The ventilation of the mine was good. Roadways dry and clean. Stairway alongside main shaft. This mine employed 15 miners, 3 boys, and 3 day men, and produced 3992 tons of coal, working 230 days. JOHN BELL is superintendent and pit boss.

The Bellville Coal Company's shaft, leased by Bunten & Elliott, was a steam-power, located one mile west of Scranton. This mine was worked out and abandoned when visited by the Inspector. The company reported 22 miners, 6 day men, working 93 days, produced 1918½ tons of coal.

The Thomas Martin mine, leased by R. N. Bunten, is a horse-power shaft opening, 90 feet deep, one mile west of Scranton. It has no railroad connection. There are two openings. The ventilation is by means of a furnace. Roadways dry and clean. This mine was leased to three miners, who operated it for a few months and then gave it up to Mr. Bunten, the present lessee. He reported 3 miners and 1 day man, working 70 days, producing 292 tons of coal.

The Henry Isaac slope is located at Isaacville, on the A. T. & S. F. railway, two miles southwest of Scranton. This was originally a shaft opening, until six years ago, when the management drove a slope to the face of the workings. They then abandoned all work south of the shaft, and worked all northeast and west by way of the slope that they still use. This mine is

equipped with a ten-horse-power engine and a three-fourths-inch steel haulage rope, which is used to haul coal out of the slope. Two good windmill pumps are used to keep the mine dry. This mine has been in operation 13 years. It gave employment to 20 miners, 5 boys, and 2 day men, and produced 5000 tons of coal, working 259 days during the year. HENRY ISAAC is pit boss.

The John D. Jack mine No. 3, known as the Sand-bank mine, located one-fourth mile south of Burlingame, and connected by switch with the A. T. & S. F. railway, is a horse-power shaft, 95 feet deep and 5x10 in size. This mine has been in operation seventeen years. At the time I visited the mine the volume of air in circulation registered 1250 cubic feet per minute. This was not sufficient for the number of men working in the mine. I insisted on a larger fire being kept in furnace, to increase the volume of air traveling. I also requested them to put up a door on cross-entry going south; this would force the air around the faces, instead of allowing it to circulate on main entries, as it was doing. The foreman promised to attend to both of these matters at once. The roadways throughout the mine were dry and clean. Twenty-two miners and 4 day men worked 290 days and produced 7400 tons of coal.

The Hotchkiss Coal and Mining Company's mine, one-fourth mile south of Burlingame, is a horse-power shaft, 85 feet deep and 5x8 in size; has no railroad connections. When Inspector visited this mine it employed fourteen miners and three day men. The ventilation, which was by means of a furnace, was fair. The roadways were dry and clean, and in good condition. Sixteen miners and 4 day men worked 250 days and produced 4000 tons of coal. NEAL HOTCHKISS is pit boss.

The H. C. Finch shaft, leased by W. Patterson, is located at Burlingame. Has no railroad connection. The furnace in Hugh McFarlane's mine ventilated this mine, as it was driven through to the McFarlane mine. At the time of the Inspector's visit the mine employed only two miners. I have heard that Mr. Patterson has given up the coal business since then. Two men, working 95 days, produced 120 tons, valued at \$234.

The Hugh McFarlane mine is located at Burlingame; depth of shaft, 84 feet; size, $4\frac{1}{2}$ x 10 feet. Stairway partitioned off main shaft. Ventilation by furnace. General condition of the mine was good. All roadways dry and clean. It gave employment to 18 miners and 2 day men; worked 210 days, and produced 3500 tons of coal. HUGH MCFARLANE is pit boss.

The Burkville shaft, leased by Austin & Ellis, succeeded by C. E. Austin, located $1\frac{1}{4}$ miles east of Burlingame, is the oldest shaft around Burlingame. It was sunk 20 years ago. Depth of shaft, 96 feet; size, 4x10. Horse power. Has no railroad connections. Ventilated by furnace. The condition of the mine in general was good. Five miners, working 200 days, produced 1100 tons of coal. SHERMAN KELLY is pit boss.

The Panter Long-wall Mining-machine Company's mine No. 5, located one mile north of Burlingame, and connected by switch with the A. T. & S. F. railway, is a horse-power shaft, 130 feet deep, and 5x10 in size. Nine miners were employed at the time Inspector visited the mine. The cages are equipped with safety-catches and bridle-chains. Escapement ladder in air-shaft. The furnace which was used for ventilating purposes was inadequate to meet the requirements

of the mine. I requested the foreman to improve it; he procured the necessary material (bricks and grate) and rebuilt the furnace before I left the locality. This mine has been in operation 12 years. Vein averages 16 inches in thickness. Fifteen miners, 3 day men, worked 150 days, and produced 2648 tons of coal. J. G. FOSTER is pit boss.

The Central Coal and Mining Company's mine, known as the Central, located one-half mile east of Burlingame, is a horse-power shaft, 70 feet deep, and 5x10 size. The mine was well ventilated and the roadways were dry and clean when visited. Eight miners, 1 boy and 2 day men, working 175 days, produced 2157 tons of coal. A. E. COLE is pit boss.

The Labor Exchange, Branch 223, mine No. 1, located one mile west of the Atchison, Topeka & Santa Fe depot at Osage City, is a horse-power shaft opening, 67 feet deep, and 5x18 in size. Has no railroad connections. Coal is hauled with wagons to railroad-cars, and some is sold to supply local trade. On the occasion of my visit to this mine I found it in good condition; the air current was good and the roadways were dry and clean. The mine has been in operation three years. The origin of this company is described in detail by my predecessor in his report for 1897. The company reported that 30 miners and 5 day men, working 185 days, produced 6305½ tons of coal during the year. ERIC FELLMAN is pit boss and ALFRED MALAPERT manager.

The Labor Exchange, Branch 223, mine No. 2, located two miles south of Burlingame, on a switch of the Atchison, Topeka & Santa Fe railway, is a horse-power shaft opening, 80 feet deep, and 5x14 feet in size. I heard such good reports of this mine while on a tour of inspection to the mines in Osage county that I concluded not to visit it, but to devote my time to other mines that were in poor condition and needed my attention. The company reported 20 miners, 3 day men, who worked 142 days, and produced 3100 tons of coal during the year. COLIN WILSON is pit boss.

Western Fuel Company's mine No. 1 is located two miles northeast of Osage City, and connected by switch with the Atchison, Topeka & Santa Fe railway. Depth of shaft, 40 feet; size, 5x13 feet. This mine has been in operation twelve years. Main entries are driven north and south from bottom. The north side of mine was abandoned on account of water. On the south side, the fifth and sixth west and the fourth, fifth and sixth east were working. A good current of air was circulating throughout the mine. Notwithstanding the fact that three good pumps were in use the roadways were very wet and muddy. The vein averages 15 inches in thickness. Twenty-eight miners, 3 day men, worked 200 days, and produced 5950 tons of coal during the year. ROBERT HUGHES is pit boss.

Western Coal Company's mine No. 4 is located one and one-half miles east of Osage City, and connected by switch with the Missouri Pacific railway. This is a new mine which was sunk to the coal in August. It is the same depth and size as mine No. 2 of this company. Natural ventilation. Average thickness of vein, fourteen inches. Twenty-five miners, 2 day men, worked 80 days, and produced 2406 tons of coal during the year. CHARLES SWANSON is pit boss.

Mine No. 5 of the same company is located three-fourths of a mile east of the Missouri Pacific depot in Osage City. This is a new mine which commenced

operation in October. Depth of shaft, 60 feet; size, 5 x 13 feet. It gave employment to 15 miners and 2 day men, who worked 70 days, and produced 914 tons of coal. PETER FORSBERG is pit boss.

Mine No. 6 of the same company, located three-fourths of a mile west of Osage City, and connected by switch with Missouri Pacific railway, is a horse-power shaft, 60 feet deep, and 5 x 13 in size. This mine has been in operation ten years. At the time of Inspector's visit there the mine gave employment to fifteen miners. The air current was rather weak, on account of the distance it had to travel. Roadways dry and clean. Fifty miners, 2 day men, worked 200 days, and produced 6699 tons of coal.

The William Petersen drift mine is located two miles south of Osage City. Has no railroad connection. Ventilated by furnace; at time of visit the air current was rather weak. The men pushed the coal to the mouth of the drift. All coal sold to supply local trade. Three miners worked 120 days and produced 387 tons of coal. WILLIAM PETERSEN is pit boss.

The Murry Bros. mine is a horse-power, located one and three-fourths miles east of Market street, Osage City. It has no railroad connection. One cage in use. All coal sold to supply local trade. Six miners, 2 day men, worked 240 days, and produced 1575 tons of coal. JOHN MURRY is pit boss.

The S. J. Carlson mine No. 4, located south of Osage City, is a horse-power shaft opening, twenty feet deep; has been in operation six years. Main entries run east and west. East side has been worked out and abandoned. The coal face was 555 feet from the bottom on west side when visited by Inspector. Furnace ventilation; air current good; roadways dry and clean. Twenty miners, 5 boys, 4 day men, working 210 days, produced 6305 tons of coal. FRED SPAIN is pit boss.

Mine No. 5 of the same company is a horse-power shaft, located at the west end of Osage City. It had just been sunk to the coal in the month of July. When Inspector visited there, September 15, the mine gave employment to twelve men. There was no railroad connection, although they expected to have a switch laid in from the Missouri Pacific railroad. Depth of shaft, 59 feet; size, 6 x 14 feet. Natural ventilation. Twelve miners, 4 day men, working 95 days, produced 1300 tons of coal. C. ANDERSON is pit boss.

The John A. Johnson mine, located northwest of Osage City, is a horse-power shaft, seventy-five feet deep; has been in operation seven years. Ventilation by furnace. The air current was weak in this mine, which was due to its traveling around the face of the workings in a single current. I advised Mr. Johnson to put in an overcast or undercast, so as to divide the air into two separate currents. This he promised to do. Roadways throughout the mine were dry and clean. It gave employment to 10 miners, who worked 200 days, and produced 2434 tons of coal during the year. ALEXANDER HAKISON is pit boss.

The Matthew Waddell mine is a horse-power, located northwest of Osage City. Depth of shaft, 76 feet; size, $4\frac{1}{2}$ x $8\frac{1}{2}$ feet. This mine has been in operation ten years. Only one side of the mine working; the other, the south side, is worked out to the boundary, and abandoned. The mine employed ten miners at the

time the Inspector visited it. The vein here averages only about 12 inches in thickness. Ventilation fair. Five miners, 1 day man, worked 200 days, producing 980 tons of coal.

Kansas Coal Company's mine is located $1\frac{1}{4}$ miles west of the Missouri Pacific depot in Osage City, and connected by switch with the Missouri Pacific railway. Depth of shaft, 82 feet; size, 5 x 14. Main entries run east and west from bottom. This is one of the best arranged mines in the county in regard to ventilation. Two undercasts are used, making two divisions of air, or four separate currents. The coal is worked out to a radius of 300 feet from the bottom of the shaft. Average thickness of vein, 15 inches. This mine employed 25 miners, 2 day men, 260 days, and produced 6890 $\frac{1}{2}$ tons of coal during the year. ED. CLIFT was pit boss, succeeded later by CHARLES S. TAYLOR. J. C. THOBURN, of Lawrence, Kan., is manager and sales agent for this company.

A. W. Granstrom's mine No. 5 is located one mile west of Osage City and connected by switch with the Mo. Pac. R. R. Depth of shaft, 76 feet; size, 5 x 12. Has been in operation 11 years. There was a strong volume of air circulating through the mine, but it was not properly conducted around the face of the workings. Some of the places had caved in between the rooms. At these places the air was allowed to travel along the entries, instead of being forced back to face of workings by hanging curtains. On their attention being called to this, the management promised to attend to the matter in the future. I have heard no complaints from this mine since that time. Thirty-six miners, 3 day men, working 151 days, produced 8434 tons during the year. CHARLES E. STONCRIST is pit boss.

Mine No. 6 of the same company, located one mile south of Osage City, was not in operation when the Inspector visited that locality, in September, and had not worked any this year. They intended starting it up in the winter. Ten miners and 1 day man, working 125 days, produced 1737 tons of coal. CHAS. GRANSTROM is pit boss.

The Thomas Chappell mine No. 4 is a new shaft, which has just been sunk to the coal when I visited there. The air-shaft had not been finished. The company reported 18 miners, 3 day men, working 144 days, produced 4198 tons of coal during the year. JOHN GOBLAR is pit boss.

The Thomas Chappell Coal Company's mine No. 3 is located two miles east of Burlingame, and connected by switch with the A. T. & S. F. railway. This is a horse-power shaft, 80 feet deep and 6 x 14 in size. Has been in operation four years. Ventilated by furnace. Stairway in main shaft. This is the strongest, roomiest and best stairway I have seen in this county so far. The condition of the mine generally was good. It gave employment to 27 miners, 4 day men, 240 days, and produced 9262 tons of coal during the year. GEORGE CHAPPELL is pit boss.

The Coughlin Coal Company's mine No. 2, owned by Coughlin Bros., is located three-fourths of a mile east of Peterton, on a switch of the Atchison, Topeka & Santa Fe railway. This mine has been in operation ten years. It gave employment to 35 miners, 4 boys, and 2 day men, who worked 220 days, and produced 5636 tons of coal during the year. The mine is equipped with a good

windmill pump. There is considerable water to contend with, but the foreman manages to keep the roads in fair condition. The ventilation of the mine is good. The vein averages 14 inches in thickness. Depth of shaft, 25 feet; size of same, 6x10. MICHAEL COUGHLIN is pit boss and JOHN COUGHLIN superintendent.

The J. C. Harvey mine is a horse-power shaft opening, located at Peterton, and connected by switch with the A. T. & S. F. railway. Depth of shaft, 32 feet; size of same, 6x14. Ventilated by furnace. The roadways were wet and muddy. The mine was in fair condition. It gave employment to 20 miners, 3 boys, and 2 day men, working 140 days, and produced 2900 tons of coal during the year. WILLIAM HARVEY is pit boss.

The Robert Simpson mine No. 1 is a horse-power, located $1\frac{1}{4}$ miles south of Burlingame, and connected by switch with the Atchison, Topeka & Santa Fe railway. Depth of shaft, 90 feet; size, 8x5. This mine has been in operation 18 years. Ventilated by furnace. Main entries run east and west from bottom. No work being done on the west side. Three entries were turned off main east, one going north and two south. The general condition of the mine was good. Vein averages 17 inches in thickness; 14 miners, 2 day men, working 220 days, produced 3300 tons of coal.

Besides these already reported, there are a number of drifts at Arvonja and Quenemo, and some drifts and strip pits at Carbondale. The names of the operators of these drifts and strip pits, together with their production, can be found in the tables of Osage county coal-mines, on pages 52, 53, 54, and 55.

LEAVENWORTH COUNTY.

LEAVENWORTH still ranks as the third coal-producing county in the state. There are four mines in the county. During the year 1899, three of these mines, viz., the Leavenworth Coal Company's mine and the Home-Riverside Company's mines Nos. 1 and 2, gave employment to 854 men, 24 boys, and produced 262,196 tons of coal, working 235 days; 289 convicts employed at the state mine worked 310 days, and produced 46,668 tons, making the total production 308,864 tons, valued at \$447,551.64. This is an increase over the year 1898 of 3549 tons. The increase would no doubt have been greater had it not been for a strike which occurred at the outside mines on the 28th of August, which laid them idle up to the 5th of October, when a compromise was made and a settlement reached which allowed the mines to resume operation. See tables on pages 70, 71, 72, and 73.

RECORD OF INSPECTION.

The Home-Riverside Coal and Mining Company's mine is located within the city limits, in the southeast quarter of the city of Leavenworth, and connected with all railroads entering Leavenworth. It is equipped with first-motion engines of modern design. A fan 22 feet in diameter with 8-foot blades, running at 49 revolutions per minute, is used as means of ventilation. The cages are protected with covers and safety-catches. The volume of air at intake registered 17,000 cubic feet per minute. The underground work was in splendid condition at the time of Inspector's visit. A good current of air was circulating around the faces of the workmen and the sanitary condition of the mine throughout was first-class. The mine generates a little gas, but not enough to make it dangerous while there is a good volume of air in circulation, except when it accumulates in a pocket at the face of the brushing. Care has to be taken that no light is near at hand when these pockets are being brushed out with a shovel or coat. A sufficient corps of firemen are hired, whose duty it is to examine the working-places every morning and report to the miners if they find any gas. Depth of shaft, 712 feet; size of same, 10 x 14 feet; average thickness of vein, 22 inches. The following repairs have been added to the mine during the past year: Twelve new wagon chutes for city trade, with new conveyers and elevators for the same; two new bridges to accommodate city trade; an addition of 40 x 30 feet to top house; a new carpenter and blacksmith shop; reconstructed old and built new 2000 feet railroad-track; one set of 100-ton-capacity steel railroad scales; reconstructed car-loading chute. JOHN PATERSON is pit boss.

Mine No. 2 belonging to the same company is located about one mile south of mine No. 1. The same description as to depth and size applies to both mines. An underground tunnel connects the two mines. This tunnel is kept in good

shape, so that a trip of cars can be hauled through it from one mine to the other in case of emergency. A fan twelve feet in diameter with four-foot blades is placed over the air-shaft. It was running at the rate of 108 revolutions per minute, and pulling 14,650 cubic feet of air per minute through the mine. The air is divided at the face of the main east and west entrance; thus four separate currents are kept in circulation, as in mine No. 1. The general condition of this mine as to ventilation, etc., while not as good as No. 1, was in fair shape throughout. During the year the hoisting-engine at the mine has been reset, a new foundation has been built under the main building, and a set of 100-ton-capacity steel railroad scales have been put in. Both mines, combined, employed 425 miners and 39 underground day men 235 days during the year, and produced 146,000 tons of coal. Forty-four overground day men were employed the same length of time. According to the returns sent to this office, the underground day men are paid two dollars per day, and the overground day men \$1.75 per day. The estimate of value of both mines combined is \$1,250,000. THOMAS GRAHAM is pit boss. GEO. KIERSTEAD is general superintendent of both mines.

Since the above was written, I learn that this company has bought the Leavenworth Coal Company mine. Mr. John Paterson is now underground superintendent and has charge of all underground work at the three mines. The company contemplate making some very material changes at their new purchase, which they name mine No. 3.

Leavenworth Coal Company's mine No. 1 is located northeast of the city of Leavenworth, and connected with the Missouri Pacific and Union Pacific railways. Depth of shaft, 720 feet; size of same, 11 x 12 feet; size of air-shaft, 8 x 10. This mine has been in operation twenty-eight years. The mine is operated on the long-wall system. The air-shaft is equipped with engines which can be used at a moment's notice, should any accident occur in the main shaft. The mine is ventilated by a large fan, 25 feet in diameter, 8-foot blades; the fan was running at the rate of 50 revolutions per minute. The volume passing into the mine registered 24,400 cubic feet per minute. This volume was sufficient, if properly conducted, to meet the requirements of the 200 men that were in the mine on the occasion of my first visit. The ventilation throughout the mine was good, except in rooms where "cave-ins" had occurred. Formerly an electric motor was used, with endless rope, to haul all the coal; this plant has been taken out and replaced with mules. Mining-machines were used, but they also have been discarded. The cages are double-deck; each deck holds two cars; thus four pit cars are hoisted every trip. The cages are also equipped with safety-catches; these catches seem to work all right in summer, but I learn that in hard frosty weather they are liable to freeze and fail to act. In the way of repairs, the air-shaft was retimbered, city chutes rebuilt, and the old boilers were taken out and replaced with new ones. Two hundred and eighty-eight miners, 24 boys and 58 day men worked 235 days, and produced 116,196 tons of coal during the year. N. K. PARKER is pit boss.

THE PENITENTIARY MINE.

The state penitentiary mine is located at Lansing, three miles south of the city of Leavenworth. It is connected by switches with the U. P., the A. T. & S. F. and the K. C. W. & N. railroads. There are two openings, 723 feet in depth. A 500-horse-power double engine is used at main shaft for hoisting and a 250-horse-power double engine is placed at the air-shaft for the same purpose.

Shortly after assuming the duties of Mine Inspector I received the following letter, which explains itself:

GOVERNOR'S OFFICE, TOPEKA, KAN., July 14, 1899.

Edward Keegan, Esq., State Mine Inspector:

DEAR SIR—There is some question about the safety of the shaft at the penitentiary mine, and the warden hardly feels like assuming the risk of running it, and the executive council hardly feel like incurring the expense of recasing it without we first have your judgment as to its safety. I wish, upon receipt of this, you would go to Lansing and make an inspection of the penitentiary mine. Kindly wire me upon receipt of this letter when you will go to Lansing, so that we can notify the warden and have him there when you arrive. This inspection ought to be made without delay and I trust you can go at once.

Yours very truly, W. E. STANLEY.

I responded to this call, and, after making a careful examination of everything in connection with the mine, and especially the main shaft, I tendered the governor the following report, and also left a duplicate copy with the warden:

LANSING, KAN., July 18, 1899.

W. E. Stanley, Governor, Topeka, Kan.:

SIR—In compliance with your request, I have this day made a careful examination of the penitentiary coal-mine. I find the main shaft in such a dangerous condition that men cannot work there with safety. It can be made safe only by retimbering from top to bottom. The two main entries also need new timber supports at intervals of two feet each for a distance of fifty feet on each side of the shaft.

While no immediate danger exists from this source, I suggest that these repairs be made at the time shaft is being retimbered. In regard to the smaller shaft, commonly called the air-shaft, I consider it in fair condition, except in two or three places, which I believe can be repaired in a short time so that it will be safe for hoisting either coal or men.

I find the hoisting apparatus, ropes and all machinery in safe and reliable condition. I find the sanitary condition of the mine to be good, except in one room on west side, where the ventilation is poor. This particular defect was due to the failure to drive a cross-section over, which should have been done at least a month ago. Superintendent Fulton is now, and for some time has been, pushing this work as rapidly as possible. I find that it will be necessary to have a survey in order to extend the mine map now in my possession.

Respectfully submitted, EDWARD KEEGAN, *Inspector.*

After submitting the foregoing report, the warden and superintendent asked if it would be safe to run the mine for a few weeks, until the material could be secured. I answered that I could not guarantee the safety of the mine, as it then stood, for even one day; therefore, would not be responsible if they should continue working. It is only fair to state that the main shaft was immediately closed down, and remained so until the material arrived. They then retimbered it, in accordance with my recommendations.

The following extract from the annual report of the superintendent of the state mine shows the extent of the improvements and repairs that have been made since that time:

Retimbered main shaft from top to bottom with 6x6 oak and cypress. Built two new cages for main shaft, also put on two new crucible steel one-and-one-half-inch cables on main shaft, and half-inch-wire bell rope. I sank main shaft three feet and graded bottom back on north side 200 feet, and on south side fifty feet. Removed all old timbers at bottom, 8x8, and replaced with new oak ones, 10x10, for a distance of fifty-five feet on north side and fifty feet on south. Built a good, roomy, well-regulated office for bottom officer at foot of main shaft. Put on two new sheave wheels at main shaft and twenty-five trap-doors on air-courses and entries. I cleaned up all the old entries, thereby reducing speed of fan from eighty to fifty revolutions per minute. Built two new water cars for hauling surplus water from mine to sink. I have retimbered the mouth of air-shaft and braced both towers. Refloored fan room with paving brick. Have floored tres-

ties from main shaft to slate dump. Have furnished one large master-wheel for small engine at air-shaft, which is twelve feet in diameter; also, one large pinion. Built a very handy and commodious office for top officers. Built a car track from air-shaft to boiler-rooms, also to engine-room at female department, which greatly facilitates the hauling of coal, and reduces the daily expense of two men and two teams and wagons. I have also built fifty new coal-cars. By putting in twenty-five new trap-doors in the air-courses, we have added all the air at working-places that is needed, and have placed the mine in a good, healthy condition. I find there are many other valuable improvements and repairs that should be made. There should be two new hoisting towers erected, and nearly all buildings on top should be repaired, as they have been in use for a number of years.

Very respectfully, ARCHIE FULTON, *Mine Superintendent.*

From the foregoing, it will be seen that the instructions of the Inspector were complied with to the letter, which not only reflects credit on the management for placing the state mine in a good sanitary, well-ventilated and safe condition, but sets an example worthy to be followed by the mine owners of the state.

During the year 1899, this mine produced 46,668 tons of coal, valued at \$81,669, working 289 convicts 310 days.

OTHER KANSAS COAL-MINES.

ATCHISON COUNTY.

W. T. Donald, mayor of Atchison, owns the only mine that was in operation in this county during the year 1899. It is located two and one-half miles south of the city of Atchison, on a branch of the Missouri Pacific railroad. The mine is a horse-power drift opening. The vein averages about eleven inches in thickness, and is worked on the long-wall system. The coal is hard to mine, as there is no fire-clay beneath it; this makes what might be termed a forced mining. The miners are paid \$1.25 per ton for mining in summer, and \$1.50 in winter; ten miners and three day men, working 255 days, produced 2500 tons of coal, valued at \$8750.

BOURBON COUNTY.

All the coal mined in this county is taken from drift mines and strip pits in and around Fort Scott. I found it almost impossible to obtain an accurate account of the amount produced during the past year. There are several small drift mines located from two to three miles southeast of Fort Scott. These mines are only worked through the fall and winter, when the local demand for the coal is good. Messrs. Stadden, King, Lyons, Knowles and Bunn are the principal operators. None of these parties keep a record of the coal produced at their mines. Considerable stripping is done in the neighborhood, but, I might say, it is utterly impossible to get an exact statement of the output of these strip pits. After spending three days going over the grounds and making a thorough investigation, I estimated the total production at 31,000 tons, valued at \$62,000. There were about 125 men employed.

CHAUTAUQUA COUNTY.

Elliott & Jones, successors to W. A. Swaffer, own the only mine the Inspector could find in operation in this county in 1899. The mine is a drift opening, located in the vicinity of Leeds. The vein, which is a good quality, averages sixteen inches in thickness. An air-shaft has been sunk, and the ventilation is natural. Fifteen miners, working eighty days, produced 600 tons, valued at \$1500. The reason for this low average to each miner was that they were nearly all working in narrow entries and few rooms had been turned off.

CLOUD COUNTY.

The mines of this county are located in the vicinity of Minersville, which is about eight miles northeast of Concordia. The vein is the same as that in Republic county, and is worked on the long-wall system. The mines are nearly all shaft openings, the average depth of same being seventy-five feet. During the year, the mines of this county gave employment to forty-four miners, seven day men, who worked 166 days, and produced 6146 tons of coal, valued at \$14,596.75. There is an interstratified band of soft carboniferous dirt which runs in the center of this vein and ranges from two to four inches in thickness.

RECORD OF INSPECTION.

The J. W. Marshall mine is a horse-power, located at Minersville; depth of shaft, 73 feet; size, 4 x 4. This mine has two escapements. Ventilation natural. Roadways dry and clean. Vein averages 20 inches in thickness. Price paid for mining is \$1.35 per ton in summer and \$1.60 per ton in winter. The selling price is \$2.25 per ton in summer and \$2.50 in winter. Four miners, working sixty-six days, produced 366 tons of coal, valued at \$940.50. J. W. MARSHALL is pit boss.

The Lynn & Jackson mine, located at Minersville, or two miles east and six north of Concordia, is a horse-power shaft opening, 86 feet deep, and 4 x 6 in size. The opening was originally 6 x 6 in size; two feet have been cased off and used as an air-shaft. One cage in use. The mine had no escapement shaft at the time of my visit there. Connections have since been made with the Marshall mine which will serve as an escapement to this mine. The roadways were dry and ventilation good. Four miners and 3 day men, working 200 days, produced 800 tons of coal, valued at \$1900.

The Thomas Struthers mine No. 2, located at Minersville, which has been in operation ten years, was abandoned last July. The main south entry is kept open to connect with No. 4 mine's main north entry; it will then answer the double purpose of air-shaft and escapement shaft for No. 4 mine. Ten miners, working 100 days, produced 1200 tons of coal during the year, valued at \$2850.

The Thomas Struthers mine No. 3, located at Minersville, is a horse-power shaft, seventy-six feet deep. This mine only worked three months during the year. Mr. Struthers allowed it to stand idle until he had connections made with mines No. 2 and No. 4, when he intended to sink a pump shaft in the most central point between his three shafts that would drain all his works.

The Thomas Struthers mine No. 4 is located close to mine No. 3; is a new mine that was sunk to the coal about September 1. Depth of shaft, 80 feet; size, 4 x 9; average thickness of vein, 24 inches. This mine had no second opening, but they were pushing an entry to connect with their No. 2 mine. When the Inspector visited there they ventilated this mine by leading the air to the face of working by means of brattice. When the connection above mentioned is made it will make a great improvement in the ventilation of the mine. The miners are paid \$1.25 per ton for mining in summer, and \$1.60 per ton in winter. The average selling price is \$2.37½ per ton. Fourteen miners, working 140 days, produced 1000 tons of coal, valued at \$2375. The production here given is for mines Nos. 3 and 4. T. STRUTHERS is pit boss.

The Richardson & Woodward mine, located six miles north and two and a half east of Concordia, is a horse-power slope and has two openings. The mine was well ventilated. All roadways were dry and clean. Eight miners and 2 day men, working 240 days, produced 1950 tons of coal, valued at \$4631.25.

The Vermite & Heer mine, same location and address, is a horse-power shaft opening, 75 feet deep and 4x9 in size, and has been in operation five years. This mine has an air-shaft 300 feet from the hoisting shaft which also serves as an escapement shaft. The mine is equipped with a good windmill pump. Two cages are in use. Four miners, working 250 days, produced 800 tons of coal, valued at \$1900.

Concordia is the post-office address of all the operators in this county.

COFFEY COUNTY.

Most of the coal produced in this county is taken from strip pits in the vicinity of Lebo. During the year 1899, the county produced 39,740 tons, valued at \$99,350.00 and employed 276 men and 42 teams an average of 150 days.

G. H. Slead operates the only shaft in the county; it is located $2\frac{1}{4}$ miles east of Neosho Rapids. Depth of shaft, 14 feet; size of same, 5 x 9 feet. The vein averages 12 inches in thickness, and is worked on the long-wall system. The mine was well ventilated when visited. Roadways dry and clean. The price paid for mining is \$1.87 $\frac{1}{2}$ per ton; selling price, \$2.50 per ton. Six miners, 1 day man, working 150 days, produced 500 tons of coal during the year.

While the post-office address of Mr. Slead is Neosho Rapids, Lyon county, his mine is located over the line in Coffey county. The same can be said of Hendrickson & Bro. and J. M. Fry, who operate strip pits in Coffey county.

The names and post-office addresses of the strip-pit operators, with the amount of tons produced by each, will be found in the following table:

T. R. Jones, Lebo }	25,000 tons.	Griff Williams, Lebo.....	400 tons.
D. O. Jones, Lebo }		Bert Combs, Lebo.....	400 "
Watson Bros., Lebo.....	3,000 "	Evan Roberts, Lebo.....	300 "
William Dischen, Lebo...	2,000 "	Richard Schnider, Lebo..	200 "
Rollin Rickbaugh, Lebo..	1,500 "	William Morrows, Lebo ..	240 "
Frank Gaddis, Lebo.....	1,100 "	Monte Finney, Lebo.....	220 "
R. J. Stoper, Lebo.....	1,150 "	J. M. Fry, Neosho Rapids,	500 "
Farmer Bros., Lebo.....	980 "	Hendrickson & Bro.,	
Reese Loyd, Lebo.....	600 "	Neosho Rapids,	200 "
T. J. Bristowe, Lebo.....	500 "	G. H. Slead, Neosho Rapids,	500 "
Ben Ransome, Lebo.....	500 "		
Ame Ransome, Lebo.....	450 "	Total	39,740 tons.

Two hundred and sixty day men, six miners and fifty-two teams were employed an average of 150 days during the year.

OTHER KANSAS COAL-MINES.

Office No..	Name of operator or company.	Post-office address.	Name or num- ber of mine.	Name of pit boss or underground foreman.	Location of mine.	Has mine railroad connection?	Name of railway.	Kind of opening
	Atchison County.							
1	W. T. Donald.	Atchison .....	.....	James Maynard.....	2½ miles south of Atchison.....	Yes.	Mo. Pac.....	Drift.
1	Chautauqua County.							
	Elliott & Jones.	Leeds	1	— Elliott.....	Leeds.....	No.	.....	Drift.
	Cloud County.							
1	J. W. Marshall.....	Concordia.....	1	J. W. Marshall.....	Minersville.....	No.	.....	Shaft.
2	Lynn & Jackson	"	1	— Jackson .....	" .....	"	.....	"
3	Thomas Struthers	"	2	Thomas Struthers .....	" .....	"	.....	"
4	"	"	3	" .....	" .....	"	.....	"
5	"	"	4	" .....	" .....	"	.....	"
6	Richardson & Woodward	"	1	— Woodward.....	" .....	"	.....	"
7	Vernitte & Heer	"	1	— Vermitte.....	" .....	"	.....	"
	Ellsworth County.							
1	C. W. Kelly.....	Wilson	1	Len Taylor.....	Southwest of Wilson.....	No.	.....	Drift.
	Elk County.							
1	C. P. Jenks.....	Howard	1	C. P. Jenks.....	5 miles southwest of Howard....	No.	.....	Slope.
	Franklin County.							
1	S. E. Richardson.....	Pomona	1	S. E. Richardson.....	Southwest of Pomona.....	No.	.....	Drift.
2	Henry Kirkman.....	"	2	H. Kirkman.....	Pomona .....	"	.....	"
3	Wm. Morris.....	"	1	Wm. Morris.....	West of Ransomville.....	"	.....	"
4	Thomas Kearney	Williamsburg	1	Thomas Kearney.....	Ransomville .....	"	.....	"
5	David Price.....	"	1	David Price.....	West of Williamsburg.....	"	.....	"
6	"	"	1	" .....	" .....	"	.....	"
7	George Caple.....	"	2	George Caple.....	Northwest of Ransomville.....	"	.....	"
8	John Morgan.....	Ransomville	1	John Morgan.....	Ransomville .....	"	.....	"
9	Frank Ribeau.....	Ottawa	1	Frank Ribeau.....	Southwest of Centropolis.....	"	.....	"
10	Charles Cass.....	"	1	Charles Cass.....	10 miles northwest of Ottawa....	"	.....	"
11	"	"	1	"	4 miles southeast of Quenemo....	"	.....	"
12	— Babsby	Quenemo	1	— Babsby .....	" .....	"	.....	"
13	Wm. Hackett	Ottawa	1	Wm. Hackett	8 miles northwest of Ottawa....	"	.....	Shaft.
14	George Melcher.....	"	1	George Melcher.....	" .....	"	.....	"

Leavenworth County.									
1	Leavenworth Coal Company.....	Leavenworth	1	Grant Parker.....	North Leavenworth.....	Yes.	*	Shaft.	
2	Home-Riverside Coal Mining Company..	"	{ 1	John Paterson.....	Leavenworth	"	*	"	
3	State of Kansas	Lansing.....	2	Thomas Graham ..	Lansing.....	"	*	"	
Linn County.									
1	The Mine Creek Coal Company.....	Pleasanton	1	George S. Brown.....	2 miles east of Pleasanton.....	Yes.	Mo. Pac.	Shaft	
2	Searight & Swanson.....	"	1	Ed. Swanson.....	2½ miles east of Pleasanton	No.		"	
3	Ben Good.....	Orchard.....	1	J. S. Good.....	7½ miles east of La Cygne	"		"	
4	Amsterdam Coal Company	"	1	G. H. Gage.....	7¾ miles east of La Cygne	"		"	
5	A. A. King.....	"	1	A. A. King.....	7¼ miles east of La Cygne.....	"		"	
6	R. G. Pinkard.....	"	1	G. Pullman.....	7 miles east of La Cygne.....	"		"	
7	Arthur Vantyle.....	"	1	A. Vantyle.....	6½ miles east of La Cygne	"		"	
8	J. T. Martin	La Cygne	1	J. T. Martin	1½ miles east of La Cygne.....	"		"	
9	Strip pits.....								
Lincoln County.									
1	L. P. Nelson.....	Denmark	1	N. P. Nelson	6 miles north of Vesper.....	No.		Shaft.	
Republic County.									
1	S. F. Curtis.....	Concordia	1	S. F. Curtis	Minersville	No.		Shaft.	
Russell County.									
1	Nelson E. Warner	Bunker Hill.....	1	N. E. Warner.....	4½ miles northeast Bunker Hill,	No.		Slope.	
2	W. T. Cushing.....	"	1	W. T. Cushing	4½ "	"		"	
Shawnee County.									
1	W. A. Eaton	Topeka	1	W. A. Eaton	3½ miles west of Topeka.....	No.		Shaft.	

****All roads entering Leavenworth.**

OTHER KANSAS COAL-MINES — CONCLUDED.

Office No....	Kind of power used.....	Tons of coal produced (2000 pounds to the ton).				Number of days mine worked during year....	Average number of miners.....	Average number of boys.....	Average number of day hands...	Average number of employees...	Av. paid per ton for mining.		Av. selling price at mine.		Estimated value of output.	Casualties.		Average wages paid day men above ground...	Average wages paid day men under ground...	Number of kegs of powder used during year....	Remarks.	
		Lump..	Nut and slack.	Mine run...	Total...						Lump..	Mine run...	Lump..	Mine run...		Killed..	Injured.					
Atchison County.																						
1	Horse..	2,500			2,500	255	10		3	\$1 37½		\$3 50		\$8,750 00				\$1 25	\$1 25			
Chautauqua County.																						
1	Man....				600	80	15		15				\$2 50	\$1,500 00								
Cloud County.																						
1	Horse..				396	66	4		4		\$1 47½		\$2 37½	\$940 50				\$1 50	\$1 50			
2	"				800	200	4		3		1 47½		2 37½	1,900 00								
3	"				1,200	100	10		7		1 47½		2 37½	2,850 00				1 50				
4	"				1,000	140	14		1		1 47½		2 37½	2,375 00								
5	"																					
6	"				1,950	240	8		2		1 47½		2 37½	4,631 25				1 50	1 50			
7	"				800	250	4		1		1 47½		2 37½	1,900 00				1 50				
Totals,					6,146	996	44		7					\$14,596 75								
Ellsworth County.																						
1	Man....				105	195	65	3		3	\$2 00		\$3 00	\$585 00								
Elk County.																						
1	Horse..				120	50	3		3		\$2 25		\$2 50	\$300 00								
Franklin County.																						
1	Man....				1,800	60	20		20		\$1 50		\$2 00	\$3,600 00								
2	"				2,625	180	24		24		1 50		2 00	5,250 00								
3	"				820	120	16		16		1 50		2 00	1,640 00								
4	"				600	195	3		3		1 75		1 75	1,050 00								
5	"				160	145	2		2		1 75		2 25	1,360 00								
6	"																					
7	"				390	180	2		2		1 75		2 25	877 50								

Leavenworth County.													
8 Man...	115	115	100	2	...	2	...	1 75	...	2 25	258 75	...	...
9 " " " "	322	322	180	2	...	2	...	1 75	...	2 25	724 50	...	...
10 " " " "	200	200	90	2	...	2	...	...	...	...	450 00	...	...
11 " " " "	200	200	90	2	...	2	...	...	...	...	450 00	...	...
12 " " " "	130	130	125	2	...	2	...	...	...	...	292 50	...	...
13 " " " "	480	480	150	4	...	1	...	1 70	...	2 25	1,080 00	...	...
14 " " " "	220	220	100	2	...	1	...	1 70	...	2 25	495 00	...	...
Totals,	8,062	8,062	1,705	83	1	1	84	...	...	...	\$16,528 25	...	...
Linn County.													
1 Steam,	127,300	116,196	235	288	24	58	370	...	\$0 68	\$1 59	\$184,751 64	1	6
2 " " " "	27,199	10,800	310	235	...	83	508	...	68	1 80	262,800 00	...	...
3 " " " "	154,499	27,389	780	948	24	195	1,167	...	...	1 75	81,669 00	...	...
Totals,	154,499	126,996	308,864	780	948	24	1,167	...	...	...	\$329,220 64	1	6
Linn County.													
1 Steam,	15,490	...	205	48	...	9	57	\$0 77½	...	...	\$17,503 70	...	...
2 Horse,	1,628	...	200	5	...	2	7	75	...	...	2,035 00	...	50
3 " " " "	1,200	...	134	3	...	3	6	75	...	...	1,500 00	...	50
4 " " " "	1,000	...	130	4	...	4	8	75	...	...	1,250 00	...	60
5 " " " "	600	...	130	2	...	1	3	75	...	...	750 00	...	25
6 " " " "	340	...	103	2	...	1	3	75	...	...	425 00	...	13
7 " " " "	360	...	105	2	...	1	3	75	...	...	450 00	...	14
8 " " " "	2,000	...	250	6	...	3	9	75	...	...	2,750 00	...	80
9 " " " "	3,000	...	127	...	...	15	15	...	...	...	3,750 00	...	...
Totals,	25,618	...	1,404	72	...	39	111	...	...	...	\$30,413 70	...	...
Lincoln County.													
1 Horse,	...	400	400	120	4	...	4	...	\$2 00	...	\$1,200 00	...	New shaft.
Republic County.													
1 Horse,	...	1,696	260	3	1	...	4	...	\$1 37½	...	\$4,240 00	...	\$1 25
Russell County.													
1 Man...	17.6	...	35	2	...	...	2	...	...	...	\$52 80	...	...
2 " " " "	10	...	20	1	...	...	1	...	...	...	30 00	...	...
Totals,	27.6	...	55	3	...	...	3	...	...	...	\$82 80	...	...
Shawnee County.													
1 Horse,	688	40	728	300	10	...	1	11	\$1 75	...	\$3 00	\$2,184 00	...

*700 pounds of dynamite.

ELK COUNTY.

C. P. Jenks's slope, located two and one-half miles south and two and one-half miles west of Howard, is the only mine Inspector could find in this county. This mine has been in operation ten years and has only been driven 500 feet from the mouth of the slope in all those years. The vein averages 18 inches in thickness, and is a fair quality of bituminous. When Inspector visited there, in October, the mine was full of water and the owner said he would not work it any more this year, at least. Three men, working 50 days, produced 120 tons of coal, valued at \$300.

ELLSWORTH COUNTY.

C. W. Kelly operated a small drift mine southwest of Wilson in this county a few months during the year. It gave employment to 3 miners for 65 days, and produced 105 tons of coal, valued at \$315. The vein averages about 14 inches in thickness. The work is done on the long-wall plan. All coal is sold to supply local trade.

FRANKLIN COUNTY.

The mines in this county are principally shafts and drifts, located in the vicinity of Pomona, Williamsburg, Ransomville, Centropolis, and Hackett's hill. The shafts are worked on the room-and-pillar system, and the mode of working is of the most primitive order. There is no provision made for ventilation, and none of them had a second opening. The Inspector insisted on them providing a second opening or he would shut them down. This they promised faithfully to do. As I have been unable to visit those mines since that time, I cannot state whether they have fulfilled their promise or not. The drift openings are worked on the long-wall plan. The vein averages fifteen inches in thickness. Nearly all the coal produced in the county is sold to supply local trade. Ottawa is the principal market place. There being no railroad connections to any of the mines, little, if any, coal is shipped. The total production of the county was 8062 tons of coal, valued at \$16,528.25. The mines of the county gave employment to 84 men and 1 boy, working an average of 141 days during the year.

RECORD OF INSPECTION.

S. E. Richardson drift No. 1, located at Pomona, employing 20 miners, working 60 days, produced 1800 tons of coal during the year. This mine was worked out and abandoned at the time Inspector visited the mines in that locality.

S. E. Richardson drift No. 2 is located three miles south and three-fourths of a mile east of Pomona. This is what is known as the "Dyer" mine, and is said to be the best quality of coal in the county. The work is done on the long-wall system. The miners are paid \$1.50 for mining. Coal is sold at the mine for \$2

per ton. This mine has two openings. Natural ventilation. Twenty-four miners, working 180 days, produced 2625 tons of coal, valued at \$5250. S. E. RICHARDSON is lessee and pit boss.

The Henry Kirkman drift mine is located three miles south and one mile west of Pomona. The vein averages 14 inches in thickness. Ventilation natural. Roadway dry and clean. The general condition of the mine was good. Sixteen miners, working 120 days, produced 820 tons of coal, valued at \$1640. HENRY KIRKMAN is pit boss.

William Morris drift mine is located one and one-half miles west and one-fourth mile north of Ransomville. This mine has three drift openings. The ventilation is natural and good. All roadways dry and in good condition. The vein averages eighteen inches in thickness, but is slightly inferior in quality to that of the Dyer mine. Selling price at mine is \$1.75 per ton. Three miners, working 195 days, produced 600 tons of coal, valued at \$1050. WILLIAM MORRIS is mine boss. Post-office address, Williamsburg.

The Thomas Kearney drift mine is located one mile west of Ransomville. This mine was idle at the time of my visit there, and I did not inspect it. Two miners, working 145 days, produced 160 tons of coal, valued at \$360. THOMAS KEARNEY is mine boss, Williamsburg.

The David Price drift mine No. 1 is located one mile west of Williamsburg. The coal in this mine averages twelve inches in thickness. The ventilation of the mine was good. The roadways were wet. The price paid for mining is two dollars per ton. The selling price at the mine is \$2.25 per ton. This mine being nearest to Ottawa, the owners had no trouble in selling the coal at this figure. DAVID PRICE is mine boss, Williamsburg.

The David Price drift mine No. 2, located close to mine No. 1, is a new mine, which had just been opened up and connected to mine No. 1 shortly before I visited there. The connection to mine No. 1 serves as an air-shaft for both mines. The condition of the mine was good. Two miners, working 180 days, produced 390 tons of coal, valued at \$877.50.

The George Caple drift mine is located one-half mile north and one-half mile west of Ransomville. Coal is mined on a small scale at this mine. Two miners, working 100 days, produced 115 tons of coal, valued at \$258.75.

The John Morgan drift mine is located one and one-half miles south of Ransomville; like the Caple mine, this is operated on a very small scale. Two miners and 1 day man worked 180, days and produced 322 tons of coal, valued at \$724.50.

The Frank Ribeau drift mine is located two and one-half miles southwest of Centropolis. The vein here averages twelve inches in thickness. I received no returns from this mine for the year 1899. I am therefore unable to state the production. Estimated at 200 tons, worth \$450. FRANK RIBEAU is pit boss.

Charles Gass operates a small drift mine six miles west and four miles north of Ottawa. The vein here averages seventeen inches in thickness. Receiving no returns from this mine, I am obliged to estimate the production at 200 tons, worth \$450.

The William Hackett mine is located seven miles north and one mile west of Ottawa. This is a horse-power shaft opening, 36 feet deep and 4x6 in size; part of the main shaft is partitioned off and used as an air-shaft; one cage in use. The vein here averages eighteen inches in thickness, and is worked on the room-and-pillar system; fire-clay mining. The roadways were dry, and ventilation was fair. One dollar and seventy cents per ton is paid for mining, selling price

at mine being \$2.25 per ton. Four miners, 1 day man, working 150 days, produced 480 tons of coal, valued at \$1080. WILLIAM HACKETT is pit boss. Address, box 176, Ottawa.

The Bagsby drift mine is located one mile south and three miles east of Quenemo. Although the post-office address of Mr. Bagsby is Quenemo, Osage county, the mine is situated in Franklin county. Two miners, working 125 days, produced 130 tons of coal, valued at \$292.50.

The George Melcher mine, same location and address as the Hackett mine, is a horse-power shaft opening, 38 feet deep and 5x4 in size. This mine has only been in operation since last May. The ventilation was fair. One miner, one boy, working 100 days, produced 220 tons of coal during the year, valued at \$495. BARRY DALE is pit boss.

LABETTE COUNTY.

All the coal produced in this county is taken from strip pits in the vicinity of Oswego and Chetopa. The vein averages fourteen or fifteen inches in thickness and is a fair quality of bituminous. I went all over the ground, and after measuring the space taken out by the different parties who operate the strip pits, I am able to place the total output at 7410 tons. This is the only way I could arrive at the correct production of the county, as few of the parties engaged in the business kept a record of the coal they took out. The following are the names of the strip-pit operators, with their location, post-office address, and the amount produced by each:

Name and post-office.	Tons.	Location.
Ora Dudgeon, Oswego.....	675.....1½	miles south of Oswego.
Mike Rutgeon, ".....	520.....4	" " "
Lee Harmon, ".....	580.....4	" southeast "
A. B. Olstead, ".....	605.....4¼	" south "
Stice & Clark, ".....	320.....2	" southeast "
George Stice, ".....	280.....2	" south "
San. Parks, ".....	80.....1	" north "
Chas. Rodenburg, ".....	700.....2	" northeast "
Gentry & Co., ".....	580.....3	" " "
Walker Coal Co., ".....	520.....3	" east "
Mr. Lamb, Chetopa.....	550.....	near Chetopa.
Nine others.....	2000	
Total	7410	

LINN COUNTY.

There were eight shaft mines and a number of strip pits in operation in this county during the year. They gave employment to 111 men and produced 25,618 tons of coal, working an average of 160 days. There is an extensive field of coal in this county, but it is not developed to any great extent on account of its proximity to the largest coal-producing counties of the state, where the coal, which is a better quality, can be mined and put on the market at a less cost.

RECORD OF INSPECTION.

The principal mine of the county is the Mine Creek Coal Company's mine No. 1, located two miles east of Pleasanton, on the Butler & Fort Madison branch.

of the Missouri Pacific railway. It has two shaft openings, ninety feet deep. Steam power; mechanical ventilation, by fan eight feet in diameter with three-foot blades, fan making sixty revolutions per minute. The vein averages twenty-eight inches in thickness, and is worked on the long-wall plan. On account of the scarcity of men and the slack work during the summer, quite a number of the places were allowed to run behind. This made the coal hard to dig in these places, and the miners had resorted to shooting it. I questioned Mr. Brown, the superintendent, in regard to the matter, and he stated that the miners were doing this voluntarily, because it was a much easier way of getting the coal than by wedging and sledging it. He said it was of no benefit to the company; in fact, he claimed it was a detriment to them, as shooting the coal caused it to produce more slack than if it had been wedged down in the usual way. I answered that I did not object to the coal being shot or produced in any way that would make it easier and more profitable work for the miners, but I did object to the miners firing their own shots during working hours, as it was very dangerous; and besides, it was a direct violation of the best mining law on the statute-book. I therefore requested him to employ shot-firers to fire the shots, stating that the cost would only be nominal, as it would not take long until those places were up even with the face, and of course, when that was done, no shots would be required. He promised to do so, and I have since learned that the matter was adjusted. Forty miners were employed at that time. The ventilation was up to the requirements of the law. A stairway in air-shaft served as an escapement in case of necessity. Only one side of the mine was working; the other side has been abandoned for some time. This mine was equipped with a light double engine, of about thirty horse-power, to do hoisting; and one double-flue boiler, twenty-eight feet long by forty inches in diameter, furnishes sufficient steam to run machinery. There is a large tract of coal land here, but it is somewhat inferior in quality compared with the southeastern part of the state. Forty-eight miners, 5 underground day men and 4 overground day men worked 205 days, and produced 15,490 tons of coal during the year, valued at \$17,503.70. GEORGE S. BROWN is foreman and superintendent.

The Searight & Swanson shaft, located two and a half miles east of Pleasanton, is a horse-power and has no railroad connections. There are two openings, fifty feet in depth. Ventilated by furnace. Mine was in fair condition when visited by the Inspector. The shaft required to be retimbered. Mr. Swanson stated that he would commence retimbering same immediately. This is the same vein of coal as that of the Mine Creek Coal Company, and is also worked on the long-wall plan. All coal produced is sold to supply local trade. Five miners and two day men worked 200 days, and produced 1628 tons of coal during the year, valued at \$2035. Later this mine was leased by Ford & Bell. ED. SWANSON is pit boss and superintendent.

The Ben Good shaft is located seven and one-half miles east of La Cygne; is a horse-power. There are two openings, fifty-eight feet deep. This mine has been in operation thirteen years. The vein of coal which is being worked averages forty inches in thickness, and is entirely free from horsebacks and faults. The mine is operated on the room- and-pillar system. The manner of ventilating this mine is rather a novel one. A hole has been drilled from the bottom of the air-shaft down to what is called the second vein, which is forty feet below the one being worked, and is said to be three feet thick. A two-inch pipe is inserted in this drill hole, leaving one end protruding up the center of the air-shaft. A light has been applied to the open end of the pipe and a strong flame is the result. I am told this has burned ever since the light was applied to it, about two years ago. And

it has been made to serve the same purpose as a furnace during that time. The above is evidence that the lower vein contains a large amount of gas, which is an invariable sign of a good body of coal. Six miners were employed at this mine at the time the Inspector visited there. Three cents per bushel is paid for mining. The coal is sold to supply local trade, the selling price being five cents per bushel. Three miners and three day men worked 134 days, and produced 1200 tons of coal during the year, valued at \$1500. J. S. GOOD is pit boss.

G. H. Gage mine is located one-fourth mile east of the Ben Good mine, and the same description applies to both, with this exception: the air-shaft is partitioned off the main shaft at this mine. A small grate fire is being used as a means of ventilation, with fair results. Four miners, three day men below and one day man on top worked 150 days, and produced 1000 tons of coal during the year, valued at \$1250. G. H. GAGE is mine boss.

The A. A. King shaft, located one-fourth mile west of the Ben Good shaft, or seven and one-fourth miles east of La Cygne, is a horse-power. Depth of shaft, 55 feet; size, 6x12. This mine had no second opening when visited, but a place is being pushed to connect with a shaft that was sunk on the Ben Good place. I ordered this place to be driven six feet wide, so as to make this connection as speedy as possible. This, I was told, was done, and the connection has been made. Two miners and one day man worked 130 days, and produced 600 tons of coal during the year, valued at \$750. A. A. KING is pit boss.

The R. G. Pinkard shaft is a horse-power, located seven miles east of La Cygne. At the time I visited the mines in that locality this mine was idle, on account of some disagreement between the lessee and owner. No report was turned in to this office from this mine. I am, therefore, unable to state the number of men employed or the number of tons of coal that were produced during the year at this mine. Two miners and one day man worked 103 days, and produced 340 tons of coal. G. PULLMAN is pit boss.

The Arthur Vantyle shaft is located six and one-half miles east of LaCygne. This mine was also idle when the Inspector visited there. I am obliged to estimate the production of this mine during the year, as I received no report from it. Two miners and 1 day man worked 105 days, and produced 360 tons. ARTHUR VANTYLE is pit boss.

The J. T. Martin mine, located one and one-half miles east of LaCygne, is a gin-power shaft opening, 50 feet deep and $5\frac{1}{2} \times 10\frac{1}{2}$ feet in size. No railroad connection. It gave employment to 6 miners, 2 pushers, and 1 dumper, worked 250 days, and produced 2000 tons of coal during the year. Miners are paid three cents per bushel, and selling price is five and six cents per bushel. Underground day men are paid one dollar per day, and overground day men are paid ninety-one cents per day. These day men are farmer boys who work in the mines during the winter months, and this accounts for the low rate of wages paid them; \$2750. J. T. MARTIN is mine boss and superintendent.

Considerable stripping was done in this county during the year by farmers who kept no account of the coal they produced. Most of the strip pits are located close to the Missouri line, east of Orchard, Kan. Other strip pits are located about four miles due east of Pleasanton. I am obliged to estimate the production of these strip pits at 3000 tons.

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LINCOLN COUNTY.

Mining is done on a small scale in this county. During the year 1899 there was only one mine in operation. It is located six miles north of Vesper, and operated by L. P. Nelson, of Denmark. The mine is a horse-power shaft opening, 40 feet deep and 4x10 feet in size. The vein averages about 16 inches in thickness, and is a lignite of very poor quality; yet it sells at \$3 per ton at the mine, and is eagerly bought by the residents of the county, as any coal that is shipped from other fields comes very high. The mine is worked on the long-wall system. It takes a good miner to average 1800 pounds of coal a day. The price paid for mining is \$2 per ton. Four miners worked 120 days and produced 400 tons of coal during the year, valued at \$1200.

REPUBLIC COUNTY.

S. F. Curtis operates the only mine in this county. This mine is located at Minersville, on the north side of the section road that divides Republic and Cloud counties, and is one and one-half miles east and six and one-half miles north of Concordia. The mine is a horse-power shaft opening, 90 feet deep, 4x8 feet in size. An air-shaft situated 45 feet from the main shaft is equipped with a horse-power fan which furnishes ventilation for the mine. Stairway in hoisting shaft. The mine was in fair condition throughout. Ventilation good. Roadways damp. The coal on the west side of shaft was all worked out and that side was abandoned, leaving only the east side of the mine to be worked. The vein, which is a lignite, averages 24 inches in thickness. The miners are paid \$1.40 per ton for mining. The selling price is \$2.50 per ton. Three miners, 1 day man, working 260 days, produced 1696 tons of coal, valued at \$4240. S. F. Curtis is mine boss. Address, Concordia.

RUSSELL COUNTY.

Coal is mined in this county on a very small scale, and only for local use. The vein averages twelve inches in thickness, and is an inferior quality of lignite. There were only two small mines in operation in the county during the year 1899, and they only worked a few days. The total production for the county for the year was 27 $\frac{3}{4}$ tons, valued at \$82.80.

Nelson E. Warner operated a little slope, which is located four and one-half miles northeast of Bunker Hill. His two sons worked 35 $\frac{1}{2}$ days in it, and produced 17 $\frac{3}{4}$ tons of coal, valued at \$52.80.

W. F. Cushing operated the other mine a short time in the beginning of the year, and produced ten tons of coal, valued at \$30.

SHAWNEE COUNTY.

I could only find one coal-mine in operation in this county. It is operated by W. A. Eaton, box 74, Topeka, Kan. Located three and one-half miles west of Kansas avenue, on Sixth street. Depth of shaft, 31 feet; size, 6x8½ feet. The mine is a horse-power. The vein of coal averages about twelve inches in thickness, and is an inferior quality of bituminous. All coal produced is sold to supply local trade in Topeka. The mine employs about fifteen miners in winter, when there is a good demand for coal. In the summer months, when the coal trade is dull, there are only about four miners employed. The price paid for mining is \$1.50 per ton in summer, and \$1.75 and \$2 in winter. The total production of the mine for the year 1899 was 728 tons, valued at \$2184. Since the Inspector's visit to this mine an escapement shaft has been sunk, which he ordered done.

MINERS' EARNINGS IN THE FOUR PRINCIPAL COAL-PRODUCING COUNTIES.

There is no subject in which the miners are more greatly interested than that of wages or earnings, and it has been my earnest hope to be able to present a correct and comprehensive statement of the earnings of this body of wage-workers of our state. But this I find it difficult to do, for many reasons, two of which are as follows: First, by direction of the law, I am compelled to rely on the figures sent in by the coal companies themselves; and second, so many persons are mining coal as an adjunct to their other occupations that they cannot be fairly classed as miners, and to include them in this calculation would be a manifest injustice to those who are engaged in coal-mining as a sole means of support. I have, therefore, selected the principal shaft mines of the four greatest coal-producing counties in the state, eliminating all but those whose employees are actually engaged in mining coal as their sole means of subsistence. If these returns, as shown in the following tables, are correct, they will give a fair estimate of the average earnings of the miners of the state. However, the Inspector has reason to believe that a few of the returns from Crawford and Cherokee counties do not represent the facts, and that the actual earnings of the miners at those shafts are much less than represented by the returns. At first I hesitated to include these particular returns in this table, but afterward concluded to do so, as it will only require one glance from the miners, especially those employed at the particular shafts alluded to, to discover the returns referred to.

A short analysis of the tables as presented is herewith given:

CRAWFORD COUNTY.

The figures on which the table on page 83 is based are taken from returns sent to this office from the different operators. The result may be taken as fairly representative of the average earnings of all the miners in the county, providing the figures sent in by the coal companies are reliable. The powder used at each mine in the table is divided equally among the miners employed, and the amount is deducted from the gross earnings. Seven per cent. additional is deducted for other expenses, such as blacksmithing, squibs, oil, paper, soap, and repairing tools. This expense is incurred by every miner. There are a number of other shaft mines in operation besides those in the following table. Nearly all of these, however, pay their miners

by the box, and not by the ton. The price paid per box makes it a matter of conjecture as to the amount paid per ton. For this reason they were omitted from the table. The strip pits are also omitted, as that work is all done by the day. In computing the miners' earnings, one of my predecessors adds one-fifth to the total earnings, to pay for piece-work, yardage, cutting faults, etc. Another adds eight cents per ton to the average price paid for mining for the same purpose. I believe that one-fifth of the amount paid for mining the coal is a little more than the miners in the county in general receive for this "dead work." On the other hand, I think that eight cents per ton is less than the amount so paid out. I have therefore added nine cents per ton to the average price paid for mining, for yardage, etc.

CHEROKEE COUNTY.

The remarks on the Crawford county miners' earnings apply as well to Cherokee county. The same deduction is made for expenses, and nine cents per ton is added to the average price paid for mining, for yardage, etc. None of the strip-pit production is included. The table on page 84 will show a fair estimate of all the miners' earnings in this county, providing the returns sent to this office are correct.

OSAGE COUNTY.

In the table of the miners' earnings in Osage county, found on page 85, nearly all the shaft mines in the county from which returns were received are represented. I did not consider it necessary to tabulate the drift and strip-pit openings of Rosemont, Arvonias, Quenemo, and Carbondale, as the men employed at these places are principally farmers who do not entirely depend on their earnings in the coal-mines for a living. Two and one-half cents per ton is added in every case to pay for work, such as turning rooms. This no doubt will more than cover the amount paid to the miners for the extra work done. Four per cent. is deducted from the gross earnings for expenses, such as blacksmithing, oil, repairing tools, etc. A glance at the table will show the amount of tons produced at each mine during the year, the number of miners employed, the number of days worked, and the average price paid per ton for mining. It will also show the gross earnings of each miner for the year, the net earnings after the expenses are deducted, the average earnings of each miner for the days the mine worked; also for the 312 working days in the year, and for the 365 days, or every day in the year. The whole will present a fair estimate of the average earnings of all the miners in the county.

TABLE OF MINERS' EARNINGS IN CRAWFORD COUNTY.

NAMES OF COMPANIES.	Product, in tons of 2000 pounds	Average price paid per ton for min- ing	Average number of miners	Number of days mine worked.....	Number of kegs of powder used, at \$2 per keg	Gross earnings of each miner for the year	Amount deducted for expenses, in- cluding powder, oil, blacksmith- ing, etc	Net earnings of each miner for the year	Average daily earn- ings for 365 days..
Mount Carmel Coal Company, mine No. 1.....	230,326	\$0 66	275	240	14,075	\$552 68	\$141 04	\$411 64	\$1 12
" " " " " " " " " " " " " " " " " " " "	263,206	66	260	275	16,109	668 13	170 67	497 46	1 36
" " " " " " " " " " " " " " " " " " " "	134,641	66	140	274	8,226	634 73	161 94	472 79	1 29
Western Coal and Mining Company, mine No. 2.....	8,286	66	190	300	8,522	607 64	158 53	449 11	1 23
" " " " " " " " " " " " " " " " " " " "	37,153	66	58	161	2,402	422 77	115 86	308 91	1 84
" " " " " " " " " " " " " " " " " " " "	81,610	66	136	269	4,430	386 04	92 88	303 18	1 83
" " " " " " " " " " " " " " " " " " " "	111,935	69	183	244	6,417	419 75	99 33	320 62	1 87
" " " " " " " " " " " " " " " " " " " "	82,871	66	152	219	5,321	359 83	95 19	264 64	1 72
Wear Coal Company, mine No. 2.....	103,146	66	70	180	2,526	491 66	106 58	385 08	1 23
" " " " " " " " " " " " " " " " " " " "	79,509	66	130	240	6,111	525 66	130 80	394 86	1 08
" " " " " " " " " " " " " " " " " " " "	103,609	66	75	235	4,283	700 55	163 24	537 31	1 27
Kansas & Texas Coal Company, mine No. 37.....	70,746	66	91	233	3,851	513 05	120 54	392 51	1 07
Pittsburg & Midway Coal Company, mine No. 4.....	137,050	66	160	293	8,769	565 35	149 18	416 17	1 14
" " " " " " " " " " " " " " " " " " " "	78,285	66	120	273	4,375	430 56	99 93	331 63	1 06
Central Coal and Coke Company, mine No. 9.....	70,003	66	110	271	4,375	420 01	108 91	311 07	1 06
" " " " " " " " " " " " " " " " " " " "	13,667	69	30	140	3,877	314 34	80 46	233 88	1 67
Weir Junction Coal Company, mine No. 1.....	53,686	66	125	245	3,381	283 19	73 90	209 29	1 57
Annot Coal Company, mine No. 1.....	70,289	66	78	270	4,000	594 75	141 19	450 56	1 23
Kansas Commercial Coal Company	31,912	69	45	245	2,045	400 35	102 38	297 97	1 21
J. H. Miller, Mulberry	31,254	66	55	280	1,600	458 84	103 22	355 62	1 97

TABLE OF MINERS' EARNINGS IN OSAGE COUNTY.

NAMES OF COMPANIES.	Av. daily earnings for 365 days.....	Av. daily earnings for 312 days.....	Av. daily earnings for days mine worked.....	Total earnings of each miner for year	Amount deducted for expenses, including black- smithing, oil, etc.	Gross earnings of each miner for year	Number of days mine worked.....	Number of miners employed.....	Av. price paid for mining, includ- ing yardage, etc..	Product, in tons of 2000 pounds
	\$1 05 1 16	\$1 22 1 35 1 06 1 01 61 52 73 35 49 64 51 96 38 89 1 01 86 82 76 1 14 69 1 13 70 44 61 74 47 55 92 79 1 38 1 02 87 1 29 82 77 63 73 92 27 60 58 51	\$1 49 1 61 1 50 1 41 2 44 1 33 85 41 90 57 75 60 1 13 1 35 46 1 04 1 18 2 08 84 76 1 33 81 1 31 82 52 72 87 55 92 1 15 1 02 1 29 96 90 77 63 39 64 92 27 60 58 51	\$381 95 423 60 332 27 316 56 193 34 266 56 129 35 180 07 235 41 189 38 352 80 145 60 327 13 370 43 314 88 263 43 417 54 253 76 411 61 257 48 162 30 225 60 272 73 111 87 172 00 288 88 319 36 403 64 300 00 282 86 233 33 122 21 287 60 86 01 220 00 137 76 183 49 194 41	\$15 92 17 65 13 84 13 18 8 05 11 10 5 38 7 50 9 80 7 89 14 70 6 06 13 63 15 43 13 11 10 97 17 39 10 57 17 15 10 72 6 76 9 40 11 36 7 16 12 03 13 30 16 81 12 50 11 78 9 72 5 09 11 98 89 38 9 16 191 13 8 22	\$337 86 441 25 346 11 329 74 201 39 277 66 134 73 187 57 245 21 197 27 367 50 441 35 151 66 340 76 385 86 327 99 274 40 334 53 294 33 428 79 438 20 268 20 169 06 235 00 254 09 179 16 300 91 332 66 420 45 312 50 294 64 243 05 127 30 299 58 89 38 229 16 191 13 205 63	255 262 221 223 79 200 80 230 185 142 240 205 100 200 260 151 250 5 300 189 240 144 225 225 245 210 15 250 230 290 22 250 220 210 150 175 93 160 22 140 225	97 102 97 60 34 200 25 36 22 6 20 12 20 25 36 5 9 25 27 18 9 22 18 22 22 22 15 16 14 18 26 9 22 3 22 1 37	\$1 20 1 20 1 40 1 40 1 40 1 40 1 40 1 40 1 40 1 40 1 40 1 40 1 40 1 40 1 40 1 40 1 40 1 40 1 40 1 20 1 20 1 15 1 20 1 25 1 25 1 15 1 25	

LEAVENWORTH COUNTY.

The table of the miners' earnings in this county, found on page 87, is based on the production of the free or outside mines, taken from the operators' returns to this office. By referring to the table, it will be seen that the mines worked 235 days, or nine months in the year. During the first six months the price paid for mining was eighty cents per ton of 2,500 pounds, or sixty-four cents per ton of 2,000 pounds, mine run; in the last three months the price paid for mining was seventy-six cents per ton, mine run—an advance of twelve cents per ton over the former price. Taking the average, then, of six months at sixty-four cents per ton, and three months at seventy-six cents per ton, we have sixty-eight cents per ton as the price paid to the miner for all coal mined. In order to be fair to all concerned, I have added six cents per ton to the average price paid for mining for yardage, cutting fault, etc. Four per cent. is deducted from the gross earnings for expenses that have to be incurred by every miner, such as blacksmithing, oil, and repairing tools, picks, wedges, etc. The remainder represents the net earnings of the miner during the year. The table also shows the average earnings of each miner for the days the mine worked, the 312 working-days in the year, and for 365, or every day in the year.

In comparing the miners' earnings in Leavenworth county for the year 1899 with the figures given by Inspector Brown in 1895, and those given by Inspector McGrath in 1897, there is a startling discrepancy apparent. Mr. Brown's figures show the miners' daily earnings to average \$2.20 for the whole county in 1895, and Mr. McGrath gives the daily earnings of the miner at \$2.16 in 1897. (No analysis is made for 1898.) In 1899 the average daily earnings of the miner is less than \$1.11, as computed by me from returns that reached this office and which I believe to be correct. On again looking at the report for the year 1895, I find that Mr. Brown has given the miner credit for receiving 77 cents per ton for all coal mined at one of the company's mines and 80 cents per ton at the other mine. Mr. McGrath's report for 1897 shows that the miner received 80 cents per ton of 2000 pounds for all coal produced (mine run) in Leavenworth county. Believing that no such prices were paid for mining during those years, I wrote requesting information in regard to the matter, and the following extract from Superintendent Kierstead's reply explains the case fairly:

"During the years 1895, 1896, 1897, and 1898, and up to October 4, 1899, the price paid for mining in this district was 80 cents per ton for 2000 pounds of screened lump coal over a 12-foot screen, with one-inch mesh. The equivalent of this in mine run was figured and calculated to be 64 cents per ton for 2000 pounds of mine-run coal."

In all those years mentioned, it will be seen that the miners of Leavenworth have been represented as earning twenty-five per cent. more than they actually earned. This misrepresentation is unaccountable when we consider the manner in which the different Inspectors deplored the pitiable and poverty-stricken condition of the miners. Some of the Inspectors in reckoning from those enlarged figures, after deducting house rent and food, showed a margin of sixteen cents per day for the miners to clothe their families and educate their children, etc. If they had started their calculation with the correct figures, they would have found the margin on the debit side of the sheet, which would have sent the families forth without clothing, etc., etc. This misrepresentation of facts may have done the miners of Leavenworth an incalculable injury during the year 1899. There was a conference between the U. M. W. of A. and the operators at which a scale of wages was agreed on. This scale was based chiefly on calculation made from figures obtained from the Mine Inspector's report. Is it any wonder, then, that no change was made in the scale of prices for mining in Leavenworth. Had their true condition been known, I believe a scale could have been adjusted at that time and the strike which followed soon after would have been averted.

TABLE OF MINERS' EARNINGS IN LEAVENWORTH COUNTY.

	Leavenw'th Coal Company's mine.	Home- Riverside Coal Mining Company's mines, Nos. 1 and 2.
Product in tons of 2000 pounds.....	116,196	146,000
Average price paid for mining, including yardage, etc.....	\$0 74	\$0 74
Number of miners employed, including boys.....	295	425
Number of days mine worked.....	235	235
Gross earnings of each miner for the year.....	\$291 47	\$254 21
Amount deducted for expenses, including oil, blacksmithing, etc....	11 66	10 16
Net earnings of each miner for the year.....	279 81	244 05
Average daily earnings for days mine worked.....	1 19	1 03
Average daily earnings for 312 days.....	89	78
Average daily earnings for 365 days.....	76	66

A MINE EXPLOSION.

An explosion occurred at the Mount Carmel Coal Company's mine No. 6, at Frontenac, on the evening of December 14, 1899. This dreadful catastrophe caused the death of four men who were employed at the mine as shot-firers. The victims of the disaster were: Elijah Dodson, Frank Vaverick, Louis Benedict, and Henry Zimmerman. Vaverick was the only man that was burned. The other three appeared to have been asphyxiated by the after-damp of the explosion. When a calamity of this kind occurs, the question naturally arises as to the cause, or causes, which led to it. The favorite theories advanced by a great many are: A blown-out shot coming in contact with a great quantity of coal-dust, or a blown-out shot relieving a pocket of gas; or both combined. The same theorists then claim that all that is necessary to prevent an explosion is to remove the coal-dust as much as possible and sprinkle the workings with water. This line of reasoning is all right as far as it goes, but there is one important factor omitted in it, and one which I believe was the most potent factor in this explosion, viz., pure, cold air, and too much of it. I know that this will be considered an absurd assertion by the average miner, but I will endeavor to give my reasons for my belief. To do this, it will be necessary to digress a little in order to describe the workings of the mine and the manner of ventilation.

To begin with, mine No. 6, where this explosion occurred, is the best arranged for ventilation of any mine in the state. It has an overcast on each side of the shaft bottom, and each side of the mine is ventilated independent of the other. The main north entry is the intake on the north side of the mine; the air dividing at the face, going east and west into the parallel entries to the main north, and from thence returning around the workings to the air-shaft on the west side by the regular air-course, and on the east by way of the overcast. The same description can be given of the south side of the mine, except that the air has a longer course, a large territory having been developed by mine No. 1 on that side which is now being worked by No. 6 mine. There is an average volume of 50,000 cubic feet of air per minute passing into the mine with the fan revolving at the rate of 55 revolutions per minute, which would give 12,500 cubic feet per minute to each quarter-section of the mine. This volume of air can be increased or decreased by increasing or decreasing the speed of the fan. While this amount of air is required when the miners are at work in the mine I consider it dangerous to fire shots with so large a

volume in circulation, for various reasons, chief of which is the expansion of the air itself, when exposed to a fierce heat such as would be caused by the flame from a blown-out shot.

As every one knows, an explosion is anything which causes a sudden increase of pressure in the surrounding air or gases, from the sudden and violent expansion of any substance (gas, liquid, or solid) in their neighborhood; hence, it will be seen that, with a large volume of air, every aperture will be filled, and the pressure will be correspondingly greater than if the air current was reduced. When we consider that 50,000 cubic feet of air per minute is sufficient to ventilate the mine and supply the necessary oxygen for 250 miners, 10 drivers, and their mules, then 5000 cubic feet of air would be sufficient for six shot-firers and allow a decent margin to carry off the smoke and gases of the exploded shots. To make allowance for leakages, however, we will allow the volume of air to be increased to 10,000 cubic feet per minute. This would be 2500 cubic feet of air per minute for each quarter-section of the mine. If this were done it would leave room for expansion, and in that way would, in my opinion, diminish the danger from a blown-out shot.

As will be seen by the evidence at the coroner's inquest, the primary cause of the explosion was due to blow-outs from unlawful shots. It will also be seen by the evidence that a more dangerous shot, to all appearances, had been fired in the room where the explosion originated the day before without causing any serious results. What was the reason of this? Was it because there was a greater supply of carbureted hydrogen gas liberated by one shot than the other? I hardly think so, as there is not enough gas generated in any part of the mine, except on rare occasions, to be detected with a naked light, and, besides, the drill hole of the shot which was fired the day before the explosion occurred was in advance of the shot that caused the explosion; hence more likely to release a body of gas. Was it, then, because of a larger supply of coal-dust on that day than the day previous to that? I cannot believe that it was, nor do I think that the danger from the coal-dust is wholly due to its explosive qualities. But I do believe it is dangerous because it is easily ignited, and by speedy combustion adds to the fire, heat and flame of blown-out shots, thus in turn increasing the expansion, and consequently the pressure of the air.

We now come to the blown-out shot, which is caused by being charged with either too much powder or too little. While all shots throw more or less flame, a well-regulated shot will expend itself in its efforts to do the work assigned to it, and its flame is confined to the vicinity of the shot. A shot that is overcharged with powder

dashes the coal with such force against the rib as to reduce it to a heap of slack. Its power not being spent in the effort, it generally fills the room full of flame, and may under certain conditions cause an explosion. Then there is the blown-out shot, or gunner, which is caused by having less powder in it than will move the coal which it is intended to move. This kind of shot acts like a gun or cannon. It blows the tamping out of the drill hole, throwing fire to a great distance in a straight line. One of the shots which originated this explosion might be placed in the latter category, to a certain extent. The hole was drilled six feet deep, and was three feet thick in a lateral direction from the mouth of the hole to the edge of the coal, and at the back or the end of the hole it was seven feet thick or wide. The powder being unable to move the heavier body of coal at the back of the shot, it flew to the lighter body on the heel of the shot, which it shot off, and, doubtless throwing considerable fire on to the entry to which it was directed, it originated the disaster which followed. Had there been more powder in this shot, the result would have been practically the same.

That both shots which were fired in this room that night were unlawful shots, is an unquestionable fact. This statement is not surprising when we consider that 80 or 90 per cent. of the shots fired in the mines of this district are unlawful, when judged by the strict letter of the law. The law calls for the same measurement (rectangular) at the mouth of the hole as at the back or "point," and to be "sheared or cut to the full depth of the drill hole." Instead of this there are "lifting" shots, "gripping" shots, and "cutting" shots, which are drilled obliquely and at every conceivable angle, and still they are considered to be perfectly safe by every one concerned. And now I believe I am safe in saying that there was scarcely a shaft mine in Crawford or Cherokee counties that did not have one or more blown-out shots on the night of this explosion. Some of these mines are very dusty, and one in particular generates a considerable quantity of carbureted hydrogen gas, yet there was no explosion at any of them. The temperature must have been nearly the same in all the mines; so that the only difference I can find, after looking over all the ground, is, that the place where the explosion originated was particularly adapted for such an occurrence, and the fire thrown out must have struck a larger volume of air than was found in any of the other mines; hence the explosion or underground tornado.

It may be well before closing to compare this explosion with the one that occurred in Chicopee on January 8, 1898. At the time of that occurrence I was about a mile away from No. 5 shaft, when the sound of the explosion reached me. I looked in the direction of the

shaft, and saw the flames shoot up in vast volumes a distance of at least fifty feet above the sheave wheels. This would indicate the presence of coal-dust, gas, or other combustible. The ventilation of No. 5 mine at that time was almost perfect, as acknowledged by all who worked there, yet, in spite of this fact, or rather, as I contend, because of it, the explosion was of the most violent nature. Three men lost their lives in it. Mules were burned to death, and pit cars and other debris, such as slate or rock, and timbers, were carried a considerable distance to the pit bottom, all denoting, in my opinion, that the stronger the air-current the more violent the explosion.

When the explosion took place at mine No. 6 I was notified, and hastened to the mine, reaching there about three hours afterwards. On inquiring of a number of people who live near the shaft, I was told that the shock of the explosion was slight, and was followed by a roaring or hissing sound like that made by steam escaping through a large pipe, and that on looking towards the shaft they saw great black clouds of smoke, vapor or dust issuing from the mouth of it, but not a single flicker of flame. And afterwards when I examined the mine I could find little trace of fire anywhere except within a radius of 100 feet from where the explosion originated, thus showing that the flame of the powder from the blow-out shots had been but slightly augmented by either coal-dust or fire-damp; so that the principal elements in this explosion must have been the fire from the powder blasts and the air-current made dangerous by its low temperature and velocity. Under the head of recommendations I refer to this matter again.

By permission of Hon. John Verner, mine inspector for the second district of Iowa, I print a well written article from his pen, which is as follows:

EXPLOSIONS IN MINES.

The following article was published in the *Colliery Engineer and Metal Miner* some time ago. The views and conclusions presented herein are, as I believe, sustained by facts which were developed by close investigation of the more recent explosions in the mines in this country, and especially those situated in the Western states. It is deplorable that even now a dangerous ignorance as to their cause exists in this state among mine men, who ought to be better informed, and, as this report will probably reach every mining camp in the state, the republication of the article may help to clear away some of that ignorance, and thus correspondingly increase the safety of our mines.

It is not the object of this article to advance any new theories or to controvert those that have been fairly well established as true; its aim is to present some facts concerning coal-dust explosions that have been obtained through careful investigation, directed with the purpose to make them of practical value to the miner, and to clear away, in a measure, the mystery and doubt that as yet seemingly surround these explosions.

Experiments, carried on by men whose standing as scientists and mining ex-

perts is sufficient guaranty of accurate and thorough research, have shown that the presence of coal-dust in any mine where powder is used for blasting purposes, or where fire-damp, even in small quantities, exists, may, under certain conditions, become a source of great danger to life and property.

We admit that these experiments, investigations and subsequent deductions have been of great value to the mining world, and it is not our intention to attempt to detract in the least degree from their merits, yet, in the light of facts now at our disposal, it seems to us that, in accounting for past explosions, which could not have been the result of fire-damp, undue prominence has been given to the presence of coal-dust in establishing the cause of these explosions, at the expense of another factor that, as we shall try to show, is of greater importance, because, without its presence, the dust will at once cease to be an element of danger. The reason these men had for making dust the prime factor can be accounted for by the fact that their experiments and investigations were mostly conducted with a view to establish the easy inflammability of coal-dust. This they did very successfully, but their success in this direction led them to the error of assuming too much in pronouncing dust the paramount factor in a so-called coal-dust explosion. We must consider that conditions, as they exist in an actual mine, necessarily differ materially from those surrounding experiments carried on in an artificial drift or shaft built at or near the surface, and, that being the case, it must be admitted that a proper conclusion cannot be arrived at, or a correct judgment formed, without due cognizance of these altered conditions.

It is generally claimed that blown-out shots were the original cause of nearly all dust explosions that have occurred in the past. While this statement is undoubtedly true, it must not be supposed that every blown-out shot is capable of causing an explosion, even if the mine is dusty and the dust easily inflammable. In Iowa, the Chicago & Iowa mine had been in operation sixteen years before a disastrous explosion occurred there. The mine was always free from gas. During all these years blown-out shots were of daily occurrence in this mine; dust was always present to a greater or less extent; the coal contained always a large amount of volatile matter, almost equaling the fixed carbon, and averaging nearly forty per cent. Yet under these conditions, looked upon as most favorable to the development of a dust explosion, this mine was worked, as stated, without serious mishap for sixteen years, a fact that should conclusively show that peculiar additional conditions must prevail before the danger of a coal-dust explosion becomes imminent.

We believe that enough data have been furnished by explosions that occurred during the last eight or ten years to determine, with a fair degree of accuracy, just what conditions must exist and what factors are necessary to cause an explosion, in the absence of fire-damp. In our opinion, the most essential factors required are:

First. Intense heat and considerable flame, furnished by a blown-out shot, so located and tamped in such manner that the intensely heated gases developed by the explosion of the powder in the hole will be projected into the passing air-current with the utmost force and without any appreciable decrease in their initial temperature.

Second. A rapidly moving current of pure air of great volume and low temperature.

Third. Coal-dust, floating in the air of the mine, of such fineness and composition as will promote easy and rapid ignition.

Next to the first factor mentioned, we consider the second of most importance,

and we are emphatically of the opinion that the volume of air entering a mine, its purity and temperature, exert a more powerful influence in bringing about an explosion than the greater or less amount of coal-dust present. We believe that the greater the volume of air in a mine the greater will be the likelihood of an explosion, should the necessary initial force be furnished by a blown-out shot of the kind mentioned above; and we believe, further, that any material decrease in the volume of the ventilating current will also lessen the danger and have the tendency to make an explosion less severe, should one occur. We are aware that these assertions are looked upon by some as faulty, and that we have the theories and views of men against us who claim the very opposite as the truth. That their case may be fairly presented, we submit their excerpts:

In *The Colliery Engineer and Metal Miner* of June, 1893, page 255, a description of the explosion at Cedar Mines, Iowa, by Mr. J. T. Beard, is given, and in it we find the following: "Let us note here again that the burning will advance all the further in the pit, and cover a greater area, just in proportion as the supply of fresh air is lessened, as it will necessarily have to travel further before finding oxygen enough to burn it out."

An article on the Jack Oak mine explosion, published in the *Ottumwa Courier*, contains this statement: "It has been suggested that a lessening of the current, either by slowing down the fan or by partially opening the door previous to firing time, would act to destroy to a large extent the force of an explosion, should one occur. Let us see how this would be. We would have less air traveling upon the airways and throughout the workings, and a consequent decrease of pressure in the pit, on the one hand. We have, on the other hand, the same explosive force and expansive energy at the initial point; the same amount of dust will be stirred up and thrown in suspension upon the air in the region of the shot, and practically the same amount of gaseous material will be at hand, depending upon the supply of oxygen to burn it. This is fired from the flame of the shot and rolls out upon the entry, propelled by its expansive force; meeting the current, it feeds upon the oxygen there supplied, and continues thus advancing till the outward expanding energy and the inward pressure of the current, aided by the tendency toward a vacuum behind, neutralize each other, when the further progress of the flame is stayed. Now (not to say a wind, but), with the customary amount of air passing, the burning and advance of the flame will be more rapid, the tendency toward a vacuum correspondingly stronger, and opposing pit pressure will be higher; all of these influences will unite to stay the progress of the flames in the entries sooner than when the current of air has been reduced."

We believe the above views to be erroneous and in opposition to physical laws.

The writer of the first quotation certainly promulgates a strange doctrine when he tells the reader that the "burning" (fire, flame) will travel further, and, therefore, continue to burn longer, without a plentiful supply of oxygen than with it—a doctrine that will hardly be acceptable to the physicist.

In the second quotation, we are asked to believe that the same force (for nothing is said about it being augmented in any way) can overcome and remove a greater opposing force with more ease and rapidity than a smaller one. The writer also maintains that the formation of a vacuum behind the explosive force will proceed more rapidly if said force is opposed by a strong current of air, and he holds that such current will materially assist to limit the extent of an explosion. We readily admit that the quicker a vacuum can be formed back of an explosion the sooner will its advance be checked and the recoil take place, but we cannot admit that this result will be hastened through the inflow of a large volume of air, for a strong current will most certainly offer greater opposition to

such advance than a weak one; a greater weight will have to be repelled; consequently the progress of an explosion will be less rapid; thus a strong current of air, instead of hastening the formation of a vacuum, will positively retard it, and we claim that this retardation, slight though it be, is absolutely essential to develop a dust explosion in its greatest intensity. It is only when the heat and flame travel at a comparatively low speed that the latent energy stored in the dust can be fully developed and become an important factor in propagating and intensifying an explosion, by allowing sufficient time for thorough and complete distillation and ignition of the gases it contains. As the force of an explosion gains in strength by this additional heat, the opposing air-current will be pressed back faster and faster, until, when finally overcome, the opportunity is given to allow the outward rush of the explosion to go on with such rapidity as to make possible the formation of a vacuum large enough and strong enough to check the explosion's advance and pull it back inward again.

A strong air-current is not only necessary to intensify the force of an explosion, but it is needed to make an explosion of any size possible at all. We know that, in order to fully develop the rendering properties of the heated gases generated by an explosion of powder, they must first be confined in a hole closed with a sufficient amount of tamping; and so to bring out the initial force of a dust explosion in its greatest strength, it is necessary to confine it at first to a limited space, in order to concentrate the force of heat and flame and prevent an immediate fragmentary scattering of its strength. The inflow of a large volume of air will do this effectually, furnishing, so to speak, the necessary tamping. It will yet do more. It will add to an explosion an energizing element by providing that vital nourishment to flame, a plentiful supply of oxygen.

We stated that the air in a mine, to become a prime factor in an explosion, besides being of large volume, must be pure and of low temperature, and we believe that these conditions are absolutely essential and must exist before a dust explosion can occur. There is not a case on record where such explosions ever occurred in a badly ventilated mine; on the contrary, we find that they invariably happened in mines where the ventilation was of superior character and then generally on the intake airway. That low temperature of the air must be regarded as an essential requirement is shown by the fact that these explosions occurred almost without exception in the colder months of the year. There are good reasons why the cold air of midwinter should be of so much greater assistance in the creation of a dust explosion than the heated atmosphere of the months of July and August.

Cold air, being much heavier than warm air, is by reason of its greater weight, and therefore greater opposing force, better adapted than the latter to concentrate and confine the heated gases and flame of a blown-out shot and to bring out their full force with greater effect. Again, cold air contains more oxygen per cubic foot than warm air, and more oxygen means easier, fiercer and more rapid combustion.

The warm air of midsummer, flowing through a mine, will act on the dust like a spray; it will saturate the latter with moisture and prevent its rising from the floor and sides and floating along with the air-current, while the cold air will absorb moisture, dry out the dust, and permit the finer particles to float readily in the air, providing the easily ignited fuel which feeds and extends a dust explosion.

The mode of ventilation has much to do with determining the severity and extent of a dust explosion. Such explosion occurring in a mine using a force-fan, will generally extend over more territory and be more destructive to property

than one occurring in a mine ventilated by exhaust-fan or furnace. The reason for this is not hard to find. With exhaustive ventilation the supply of fresh air to the mine is not only immediately shut off as soon as an explosion is started, but the amount of air back of the starting-point of an explosion is steadily reduced by the action of the fan or furnace. The benefit derived is twofold. A powerful vacuum will be steadily formed, checking the explosion's advance, and on its recoil it will find a diminished supply of oxygen detracting from its force.

It is quite different should an explosion occur in a mine ventilated by a force-fan. Here a continuous supply of oxygen is furnished and thrown against the explosion in front, while back of it no agency is at work to diminish it, the speedy formation of a vacuum is delayed, heat and flame will be increased, and the explosion's force enhanced. The result is greater destruction, extending over a larger territory.

Very seldom indeed does an exhaust-fan suffer destruction from the effects of a dust explosion unaided by fire-damp. For the reason above given its force will be spent before it can reach the upcast. We know of only one instance where an exhaust-fan was destroyed at a non-gaseous mine by such explosion. This happened at Rich Hill, Mo., December 29, 1891; but in this case the mine was new, its workings were yet of limited extent, and the fan was erected in close proximity to the downcast shaft, the upcast and downcast being separated only by a wooden partition.

On the other hand, an explosion traceable to coal-dust, occurring in a mine ventilated by a force-fan, is almost sure to wreck the ventilator. As examples we mention the Pekay, Iowa, disaster of 1892, and the recent explosion at the Vulcan mine, in Colorado. In both instances the fans were wrecked, the explosion extended through either mine from downcast to upcast, and in both cases the destruction wrought was fearful.

The latter case seems to furnish a very strong argument in favor of the ground we have taken, that the greater the amount of air going into a mine the more pronounced will be the danger of a dust explosion in the presence of a blown-out shot. Originally the Vulcan mine was ventilated by a force-fan, producing about 34,000 cubic feet of air per minute; a few months before the explosion occurred the management added another fan, and the two, working together, forced into the mine from 54,000 to 60,000 cubic feet per minute. With the less volume the mine had been working in safety; with the greater came death and destruction. In this case the large volume of air present did not only add force to the explosion, but it became also the direct means by which all the men in the mine lost their lives. The excellent description of this disaster by Mine Inspector David Griffiths, of Colorado, leads us to believe that while the force gained through limited ignition of coal-dust and possibly small quantities of gas and added to the primary force developed by the blown-out shot was not very great, it was amply sufficient to hurl the great mass of air with such force and rapidity through the mine as to invest it with the violence and destructiveness of a tornado.

This article may appear to some an argument in favor of poor ventilation. It should not be so considered. It should be the aim of all to suppress the occurrence of dangerous blown-out shots, and thus eliminate the primary cause of these explosions. That accomplished, the air-current entering a mine, no matter how large its volume may be, can then fulfil its beneficent mission to preserve and sustain life, and there need be no fear that its dangerous forces will be awakened. The proposition to do away with the atmosphere surrounding the earth, to prevent the occurrences of cyclones and tornadoes, would be about as sensible as the suggestion of the idea of inefficient ventilation to prevent a dust explosion in a mine.

INQUEST AND INQUIRY RELATING TO THE EXPLOSION
IN MINE No. 6.

Testimony of witnesses taken the 15th day of December, 1899, at an inquest before J. J. Campbell, justice of the peace of the city of Pittsburg, Crawford county, Kansas, the regular coroner of said county being absent therefrom.

DR. CHARLES C. BRADLEY, being sworn as a witness, testifies as follows:

Q. Where do you live, Mr. Bradley?

A. Just at present here at Frontenac.

Q. Were you in Frontenac on the 14th of December of this year?

A. Yes, sir.

Q. Were you at mine No. 6 of the Mount Carmel Coal Company after the explosion occurred there yesterday?

A. Yes, sir.

Q. Did you examine the bodies of Frank Vaverick, E. Dodson, Louis Benedict, and Henry Zimmerman?

A. I saw those bodies.

Q. Did you make any examination of them?

A. I made no minute examination of them. I merely saw them as they came out, and was satisfied there was no life in the bodies.

Q. Did you make examination sufficient to tell whether the bodies were burned or not?

A. Only about the face and hands; I did n't take the clothes off.

Q. What did you find the condition of the face and hands to be?

A. Vaverick was quite badly burned on the face and hands; the other three were not burned to any extent.

Q. From the examination you made, doctor, and your knowledge as a practicing physician, could you tell in what way the deceased came to their death?

A. Well, I would n't swear to it; I have an opinion, of course.

Q. What, in your best judgment, doctor, caused the death of the bodies you examined?

A. Explosion and its results, the after-damp after the explosion.

Q. Did you make examination enough, doctor, of all of them, except Mr. Vaverick, to tell whether or not the hair was scorched and burned?

A. My recollection about the matter is that they were not; Mr. Dodson I could n't swear to.

Q. Did you make sufficient examination of the bodies you have described to tell whether or not they came to their death by being burned?

A. In my opinion, the immediate cause of death was not from a burn.

Q. There were no outward or visible marks or wounds from which you would judge they came to their death or they could possibly have come to their death than as stated by you?

A. No.

PETER MCCALL, being sworn as a witness, testifies as follows:

Q. Mr. McCall, what is your profession?

A. Miner.

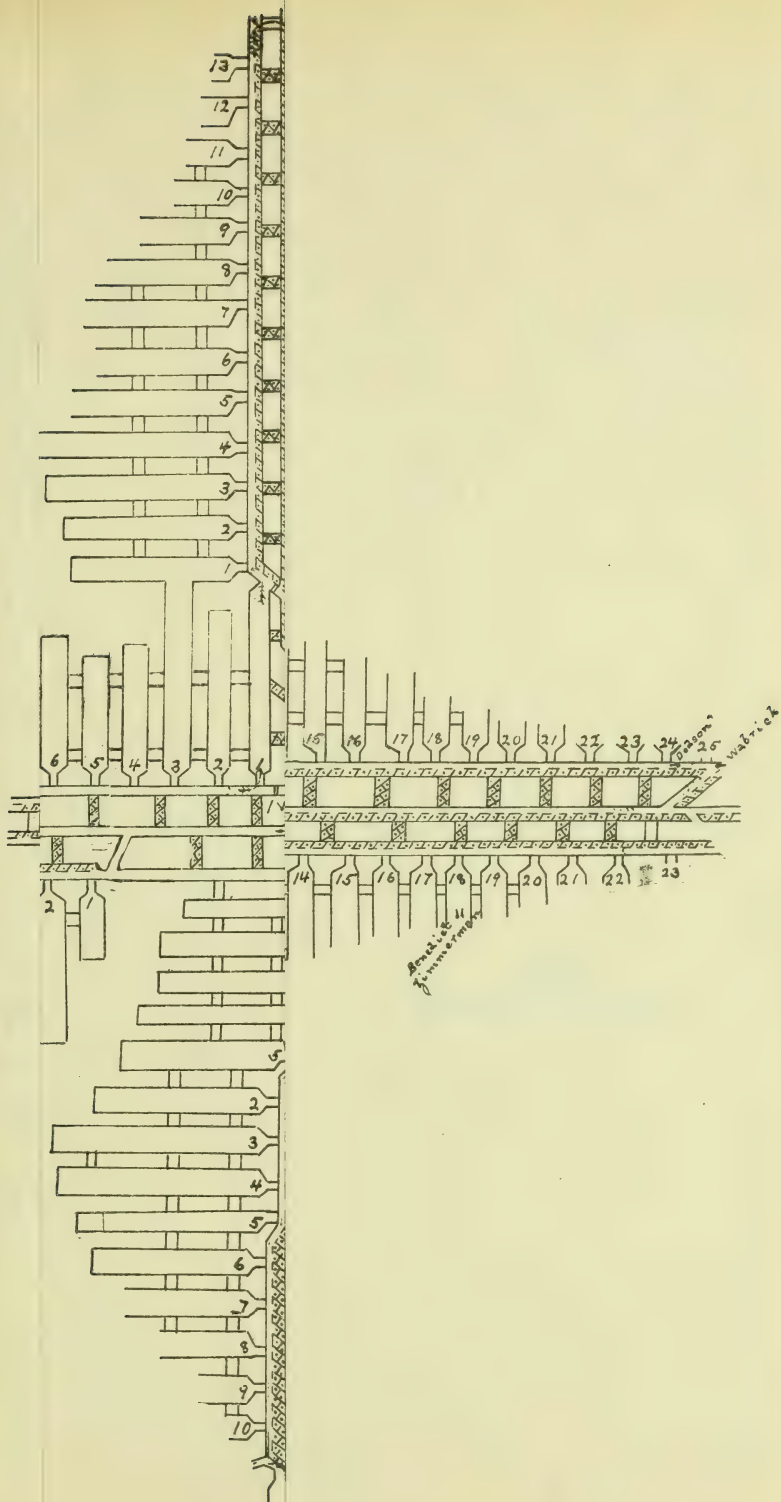
Q. You live here, in Frontenac, Kan.?

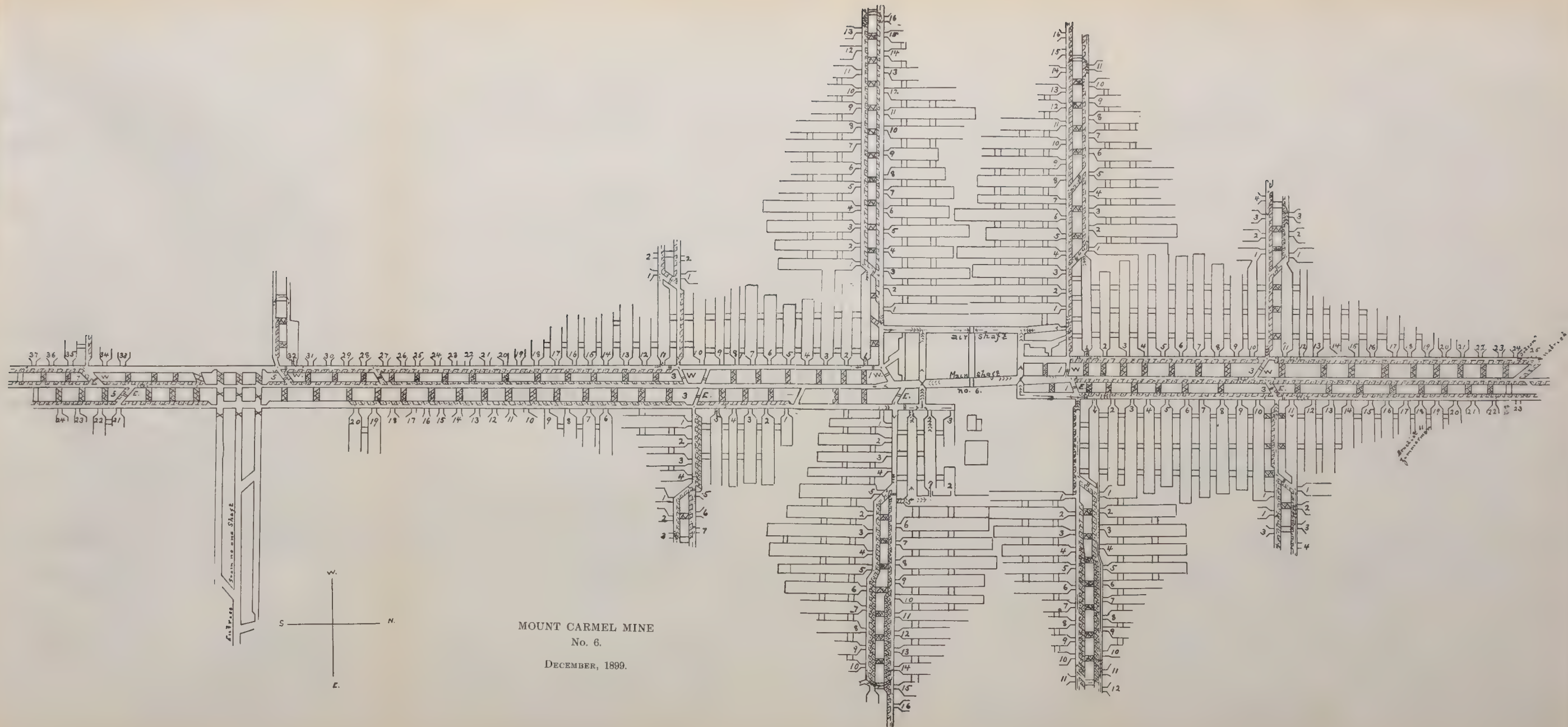
A. Yes, sir.

Q. Were you at mine No. 6 of the Mount Carmel Coal Company on December the 14th, 1899?

A. Yes, sir.

Q. Were you there at or near the time the explosion occurred yesterday evening?





A. As near as I can judge, about thirty minutes after the explosion.

Q. Did you make any examination of the mine after the explosion?

A. Only that which was necessary to get the bodies.

Q. Just state what bodies and where they were found in the mine.

A. Mr. Campbell, Mr. Knight and myself found the bodies of Frank Vaverick and E. Dodson in the west parallel entry to the main north. The body of Frank Vaverick was lying near the face of the entry. The body of Dodson was laying south about forty or fifty feet, both in the same entry. Vaverick was burned about the face and hands. There did n't appear to be any burns on Dodson. Those were the only two that I helped to find. Those bodies were taken out and we proceeded to get the others, but they were got by another party.

Q. Were there any bruises or outward marks of violence on the bodies when you found them?

A. No, with the exception of Vaverick being burned on his face and hands. From the position that Dodson was lying in he appeared to have fell. It looked to me as if he had been traveling after the explosion had taken place and fell full length and lay in a natural position.

Q. Were there any bruises on Mr. Dodson's body?

A. None on the outside of his clothes, on his face, hands, or feet.

Q. What kind of work was Mr. Dodson and Mr. Vaverick engaged in?

A. In firing shots.

Q. How far were the bodies lying, when found, from the place where the last shot was fired, if you know?

A. I don't know, because I did n't examine the places.

Q. How far were the bodies lying from the rooms where shots would naturally be fired?

A. Dodson's body was about six feet north of the last room turned in that entry.

Q. You are a miner of several years' experience, are you not, Mr. McCall?

A. Yes, sir. I have worked in them for about thirty-two years.

Q. From the experience you have had in and about the mines, and the condition of the mine when you went in after the bodies you have described, what, in your best judgment, Mr. McCall, caused the death of Mr. Vaverick and Mr. Dodson?

A. My opinion is Mr. Dodson was asphyxiated. I do n't know whether the burns on Mr. Vaverick would be sufficient to cause death or not.

Q. At the time you went into the mine after these bodies, Mr. McCall, do you think there was sufficient bad air or after-damp to cause death?

A. Yes, sir.

Q. From the examination you made of these two bodies, it is your best judgment that there were no wounds or bruises on the bodies sufficient to cause death?

A. Yes, sir; that's my opinion.

Questions by Morris Cliggitt:

Q. Have you been working in mine No. 6?

A. Yes, sir.

Q. How long?

A. About four months.

Q. What were you doing in there?

A. My work is assistant superintendent.

Q. Who is the pit boss?

A. John O'Leary.

Q. How long has that mine been in operation ?

A. About sixteen months, I guess.

Q. To what extent are the entries driven in the shaft ?

A. The main north is about 1200 feet from the bottom of the shaft ; the main south is about 2000 feet ?

Q. All of these deaths occurred on the north side ?

A. Yes, sir.

Q. Then I understand two of them on the west and two on the east of the main north ?

A. Yes, sir.

Q. Were you in and around the mine sufficiently, after the accident, to notice the condition of the woodwork ; whether or not that was burned in any way ?

A. As far as I went I seen no evidence of fire, except on the door to the first west, on the south side.

Q. How much was that burned ?

A. That was burning when we got down there. It was n't much. It was afire.

Q. How far was that from where you found the bodies ?

A. That would be about 1500 feet.

Q. About south ?

A. South.

Q. How many shot-firers were employed in the shaft ?

A. Six.

Q. Were they working on both north and south ?

A. Yes, sir.

Q. Was the mine apportioned out to the shot-firers ? Or, if you know, state how they worked in firing the shots.

A. Each two men had a certain portion of the mine to fire — what the miners call "runs."

Q. Did they work separately or usually in pairs ?

A. They work in pairs.

Q. How long have you had six shot-firers at work ?

A. Since some time in the beginning of November — the 1st of December.

Q. Are you in the mine every day, right along ?

A. Yes, sir.

Q. What, if any, knowledge or information have you as to whether or not there was gas in the mine ?

A. I have never seen any gas in the mine.

Q. Have you had any information with respect to it ?

A. No, sir ; there has never been any reported to me.

Q. From where you say this door was burning, what would be the direction of the air-current from or toward the bodies which you found ?

A. The air-current from that door would travel south and make its return to the air-course, and could never reach those bodies.

Q. Was any of the clothing on any of the bodies that you saw burned ?

A. None, with the exception of Vaverick.

Q. How much was Vaverick's clothes burned ?

A. I should judge it would be about the wristband of his shirt.

Q. Now, was there any noise accompanying this explosion ?

A. I did n't hear any.

Q. Well, what is your opinion as to the fact of there having been an explosion, from what you saw ?

A. I have n't made a sufficient examination to justify me in giving any theory.

Q. Well, you know whether there is any portion of the woodwork in the hoisting or air-shaft burned?

A. In the hoisting shaft, so far as I could see, there was no indication of fire.

Q. Well, were there any timbers displaced, or props blown down, or doors blown off, or anything of that kind?

A. There was three timbers on the bottom blown out. The overcast on the south side is blown out, and the door on the east and the door on the west on the south side are blown down.

Q. Where were these timbers?

A. Near the bottom of the shaft.

Q. Well, what part of the work had they formed a part of?

A. Supporting the roof, near the bottom of the shaft.

Q. Well, now, on this north entry where Vaverick was found, was that still being driven?

A. Yes, sir.

Q. Do you know whether the shot at the face of the entry had been fired?

A. I believe not.

Q. Well, now, as I understand it, the air-current in this parallel entry of the main north would be south from the face of the entry?

A. Yes, sir.

Q. And the shot-firers in firing shots would work against the current; that is, in that entry, from south to north?

A. Yes, sir.

Q. Now, with these doors broken down, do you know of any way that an air-current could have reached from the south side to the entries where the bodies were found?

A. No, sir. I might explain that. Along the north and on the south is two separate currents. Each current makes its return to the air-shaft, and it's not possible to interfere with the other currents.

Questions by O. T. Boaz:

Q. The air-current in the main north and parallels went north in the main entry, crossed over to the parallel entries through break-throughs, and then went south to the air-course?

A. Yes, sir.

Q. How far was the break-through last north between the main entry and the west parallel from the face of the entry?

A. From the face of the west parallel to the break-through was about twelve feet.

Q. Now, is there any way in which any gas of a suffocating nature could have traveled from the face of the west parallel across the main entry to the east parallel, unless it had gone directly against the air course?

A. No, sir; there is no other way it could go.

Q. The other two men who were found dead, you know, were not found in the west parallel?

A. Yes, sir.

Q. The doors on the south side were blown down; some of the doors?

A. Yes, sir.

Q. That part of the mine which you speak of as the south side is the part lying south of the bottom of the shaft and any east or west entries which may be in a line or nearly on a line with the bottom of the shaft?

A. Everything south of the bottom of the shaft is called the south side.

Q. Now, all the evidence you saw in the way of disturbed timbers or doors of an explosion were on the south side?

A. No; there was some on the north side.

Q. Well, these timbers you speak of; they were on the south side, were they?

A. Two of them, and one was on the north.

Q. When had you last been in the mine before the explosion?

A. On the forenoon of the day the explosion occurred.

Q. These timbers and doors at that time were in proper condition?

A. Yes, sir.

Q. What method have they of supplying the mine with air?

A. By a fan.

Q. Well, is the air forced on the mine, or drawn out?

A. Drawn out.

Q. Then, as long as these doors were in proper condition it would have been impossible for any air on the south side to have gone on the north side?

A. Yes, when things are in their normal condition.

Q. Has there ever been any complaint about the air supply being insufficient in that mine?

A. Well, there has been a little, in this way: on the south side, when we holed into No. 1—connected with No. 1—there was for a little time the current was baffled, but that was remedied before this explosion.

Q. Give us the course of the air from the surface through the mine until it again reaches the surface.

A. The main shaft is the in-taker. It divides at the bottom; one portion travels north and the other south. On the north side it travels to the face of the main north entry and divides, a portion going east and a portion west; then the course is south to the air-shaft or outlet. On the south side it travels south to the face of the main south entry, divides, a portion going east and a portion west; then travels north to the air-shaft or outlet.

PETE CAMPBELL, being sworn as a witness, testifies as follows:

Q. Where do you live, Mr. Campbell?

A. Frontenac.

Q. How long have you lived here?

A. About five months.

Q. Are you in the employ of the Mount Carmel Coal Company?

A. Yes, sir.

Q. What is your duty as one of their employees?

A. Miner.

Q. Were you in or about mine No. 6 owned by that company on December 14, 1899?

A. Yes, sir.

Q. Did you visit that mine after the explosion occurred there on that day?

A. Yes, sir.

Q. Just state what, if anything, you found there at that time.

A. Myself and Mr. Bell and Mr. O'Leary went down. We got on the south side of the shaft. We found one timber blown out and the overcast blown out. Mr. Bell told Mr. O'Leary to go and get some canvas to nail over the overcast; and we seen some fire, and me and Mr. Bell went and got some water and went and put the fire out.

Q. Is that all you found?

A. Then we went to the face of the straight south and back down a portion; me and Mr. McCall took the west entry off the straight south, and came back to

the bottom. We went then into the north, went through the break-through into the parallel west entry, where we found the two dead bodies.

Q. What bodies did you find there, Mr. Campbell?

A. Well, one of the men I do n't know what his name is. We found Dodson.

Q. Did you find the body of Mr. Vaverick there?

A. I believe that was his name.

Q. How close were those bodies lying together when you found them?

A. About forty feet, to my nearest judgment.

Q. Where was Mr. Dodson's body lying, relative to that of Mr. Vaverick's.

A. Mr. Vaverick was lying close to the face and Dodson was about forty feet south.

Q. Was Mr. Dodson's body lying in the entry or in the room?

A. In the entry.

Q. At the time you found the bodies that you have just described, did you make an examination of the condition, as to whether or not they were burned or bruised?

A. I seen Mr. Vaverick's hands and they were burned.

Q. Did you see his face?

A. I did n't take no notice to his face at all.

Q. From the examination you made of Mr. Vaverick's body, would you be able to state whether or not there were bruises or wounds on it?

A. That's all I could see. I could see no bruises.

Q. What examination did you make, if any, of Mr. Dodson's body?

A. I sat beside him and looked at the body. I could n't see his face, as he was lying down on it.

Q. Did you make any examination further than just to look at the body?

A. That was all.

Q. How long have you been engaged in working in mines in this or in other states?

A. About twenty-seven years.

Q. From the experience you have had as a miner, being in and about mines, and judging from the condition of this mine when you went in after the explosion, what was the cause, or by what means, in your best judgment, did Mr. Dodson and Mr. Vaverick come to death?

A. Mr. Vaverick could have died by inhaling the flames, as he was burned, or could die by after-damp; either of the two.

Q. In your judgment, Mr. Campbell, at the time you went into the mine after the explosion, was there sufficient after-damp or foul air in the mine to produce death?

A. Yes, sir.

Question by Juror Patton:

Q. You heard the question of Mr. McCall, did you not?

A. Yes, sir.

Q. Do you verify the testimony given by Mr. McCall in every particular?

A. No, sir.

Q. I wish you would state in what particular you don't verify his testimony.

A. The testimony I have given I give from my own knowledge and not from what Mr. McCall said.

Witness: I did n't understand the question. I agree with Mr. McCall in his statement.

JOHN O'LEARY, being sworn as a witness, testifies as follows:

Q. Do you live in Frontenac?

A. Yes, sir.

Q. How long have you lived in Frontenac, Mr. O'Leary?

A. I have lived here since last February.

Q. What is your occupation?

A. Pit boss, at present.

Q. Are you in the employ of the Mount Carmel Coal Company?

A. Yes, sir.

Q. Were you at mine No. 6 owned by that company on the 14th day of December, 1899?

A. Yes, sir.

Q. Were you there after the explosion occurred?

A. Yes, sir.

Q. Now, Mr. O'Leary, just tell in brief what you found there in the mine after you visited it after the explosion.

A. I went down the shaft in company with Mr. Bell and Mr. Campbell. We examined the bottom of the shaft, and found the overcast on the south side blown out; also several stoppings on the north, and two doors on the south and two on the north, known as the east and west doors. I started in then to canvas and brattice up the overcast, to secure ventilation to get inside of the mine. While we were doing this, others went on ahead as far as we could let them. After we got the doors and stoppings all fixed up, by this time they had found Mr. Dodson and Mr. Vaverick in the back northwest entry. I did n't see Mr. Vaverick where he laid. They had him placed in the straight north when I got there, but I saw Dodson and helped to take him to the bottom of the shaft. Then we at once proceeded to hunt for the other men, which we found in No. 18 room, in the back northeast, lying face downward to the face of the room. And John McGarvie and Mr. Keegan and myself took Mr. Zimmerman to the straight north, and there he was conveyed to the bottom of the shaft, and five others went after the other dead body.

Q. Did you make any examination of these bodies.

A. No, sir; I did n't.

Q. From what you saw of the bodies, could you tell whether they were burned or bruised—I mean the bodies of Benedict and Zimmerman?

A. They were n't burnt or bruised.

Q. How long have you worked in and about the mines?

A. Nearly thirty-five years.

Q. From your experience as a miner and from the condition of the bodies and the mine when you went in after the explosion, what, in your best judgment, caused the death of these two persons—Mr. Zimmerman, Mr. Benedict, Mr. Vaverick, and Mr. Dodson?

A. From suffocation is my best judgment.

Q. Do you think at the time you went into the mine after the explosion there was sufficient foul air or after-damp to cause death in the mine?

A. Yes, sir.

Question by Juror Patton:

Q. I would ask, Mr. O'Leary, if in finding the bodies you did n't find the most of them face downward.

A. Yes, sir.

Q. You being an experienced miner and acquainted with fires in shafts, would n't that have been an indication that they were trying to avoid the heat?

A. They were trying to get air from the bottom. Where they were there was no sign of heat.

Questions by Morris Cliggitt:

Q. You say, in your opinion, there was sufficient foul air in the mine to produce or cause the death of these men?

A. Yes, sir.

Q. Well, that foul air would be produced by the explosion itself, would it not?

A. Yes; it would come afterwards.

Q. How frequently were you in the mine up to the time of this explosion?

A. Every day.

Q. What was the condition of the air in the mine during the time you worked there, up to the time of this accident?

A. It was good.

Q. Did you know of any foul air or gas in the mine?

A. No.

Q. Have you traveled over or examined the mine since the accident, and tried to learn what caused or produced the explosion?

A. Yes, sir, I have traveled through the mine since the explosion.

Q. Who, if any one, accompanied you?

A. Mr. Bell and Mr. Keegan.

Q. Were all the shots fired?

A. No, sir.

Q. Where did you find that the shots were not fired?

A. In the last room in the west; that's inside room, straight north, back northeast; four rooms, I believe, on the back northeast.

Q. From your examination, did you reach or form any opinion as to what caused the explosion?

A. No. In room 14 is the only room that there is any sign where it would cause an explosion. They had two shots; one would measure about 7 feet 8 inches on the back, and about 3 feet on the point of the hole. The props in that room were scorched—that is, some of them. The cars that were out on the switch were thrown off the track.

Q. These shots in room 14 on the east parallel of the north entry were both fired?

A. Yes, sir.

Q. Had they done their work?

A. One of them had thrown a little coal: the other did n't.

Q. You explained one of the shots; what about the other one?

A. The other one I did n't examine so particular. Mr. Keegan, he examined it.

Q. What I want to know is, was either or both a blown-out shot?

A. Well, by the appearance in the room, that's what it done.

Q. Well, you could tell from an examination whether or not the shots did their work?

A. Certainly, yes.

Q. Well, did they?

A. No.

Q. How far from room 14 was it that you found the bodies you have described?

A. About 160 feet.

Q. Who has charge of the shot-firers?

A. I have.

Q. Who, if any one, directs them where to work and how to work?

A. Each pair had their own section of the shaft. The shaft is sectioned out in three sections for the shot-firers.

Q. Well, now, in firing a shot, is it or is it not a rule that all of the shots that are put in must be fired by the shot-firers, or do they exercise their own judgment as to what shots to fire?

A. They have my instructions not to fire any shots that they think is unsafe to fire.

Q. Then, as I understand it, each shot-firer is to exercise his own judgment?

A. Yes, sir.

Q. And in case that in the judgment of a shot-firer any shot is improperly put in, or for any reason it would be dangerous or unsafe to fire it, the shot-firers were to determine those questions for themselves?

A. Yes, sir.

Q. Who does the tamping?

A. If they are dry holes, the miners themselves, and if they are wet holes the shot-firers do.

Q. Can you tell from your knowledge of the mine in what parts or rooms of the mine the shots would be tamped?

A. No.

Q. Then sometimes the same room would be dry so the miner could tamp their own shots, and sometimes so he could not?

A. Yes, it could be so that one could be dry and he could tamp it and the other would be wet.

Q. That is, one drill hole could be wet and drill hole dry in the same room?

A. Yes, sir.

Q. Could you tell from your examination whether or not these shots in room 14 had been tamped by the miner?

A. No, I could n't.

Q. What do the shot-firers use, squibs or fuse in firing in No. 6?

A. Both.

Q. How do they determine which to use?

A. The miner furnishes the fuse himself, for to be sure and get his hole off, for fear of one shot would knock the other out with squibs.

Q. Then, do I understand that in one of the two holes fuse would be used and in the other a squib?

A. Yes, sir.

Q. That would be to give time for firing?

A. Yes, sir.

Q. Do they usually put in two holes?

A. Yes.

Q. About these holes in 14: I do n't understand fully your explanation. Did you measure the depth of either of them?

A. Yes.

Q. Were they put in in the face?

A. Yes, sir.

Q. Well, now, how deep were they?

A. Six foot deep.

Q. Each of them?

A. Well I did n't measure but one, but the others measured it, and it was six feet, too.

Q. You were present when the other one was measured?

A. Yes, sir.

Q. Could you tell anything about how much powder had been used?

A. No, sir.

Questions by O. T. Boaz:

Q. You are the man to whom the miners would report in case of fire-damp or foul air in the mine, aren't you?

A. Yes, sir.

Q. About how many men were working there yesterday afternoon?

A. About 250 men.

Q. They quit work about half-past three, didn't they?

A. Yes, sir.

Q. Did any of them report to you that there was any bad air in the mine yesterday afternoon?

A. No, sir.

Q. About how high does coal stand in room 14?

A. About three foot six.

Q. What is there immediately above the coal?

A. Rock top.

Q. What is there below it?

A. That's rock.

Q. Rock bottom and rock top, both?

A. Yes, sir.

Q. You say that shot was about three feet from the point?

A. Yes, sir.

Q. You mean by that, three feet from where there was no coal?

A. The shot was too thick at the back for the front of the hole, as it measured three feet in the front and seven feet eight inches at the back.

Questions by Coroner:

Q. At the time you found the bodies of Benedict and Zimmerman, and the examination you made of them, could you tell whether or not the hair was scorched on their heads and hands?

A. Yes; neither their heads or hands were scorched.

Q. Now, you say, Mr. O'Leary, that you found these bodies in room 18; were the rooms between 18 and 14 fired?

A. No, they were not. Yes, two was.

Q. How long does it generally take a shot to go off after the squib or fuse is once lighted?

A. About a couple of minutes, or three.

Q. Then, Mr. Benedict and Mr. Zimmerman would have had to gone back and fired 14 after they fired 15 and 16, if the firing of the two shots in 14 caused the explosion?

A. Not necessarily, if the shots in 14 were fired with fuse.

Questions by Boaz:

Q. In the regular course of work, which pair of the six shot-firers would have fired shot in room 14?

A. Zimmerman and Benedict.

Q. Now, one of these would have fired the shots in 14 while the other would probably be firing the shots in 13; that is, fire the fuse?

A. Yes, that is how they generally do it.

Q. Then, after lighting the squib one would have gone to 16 and the other 15, and there light the fuse or squib?

A. Yes, sir.

Q. And then one would go in 17 and one in 18, and there prepared to fire a shot. Now, if they found in 18 shots that were not tamped they would both go in 18 to tamp those shots, wouldn't they?

A. Not necessarily; each one tamps a shot themselves.

Q. Well, 17 wasn't fired, was it?

A. No, sir.

Q. Then the man who should have fired 17 had delayed firing 17, waiting for 18 to tamp a shot?

A. 17 was tamping shots and had n't finished.

Q. Do you know who the two men were who were working in 14 yesterday afternoon?

A. Only one man was working there; an Italian by the name of Dom. Fiorne.

EDWARD KEEGAN, being duly sworn as a witness, testifies as follows:

Q. Where do you live, Mr. Keegan?

A. My residence is at Chicopee. I am staying at Pittsburg for a little while.

Q. Have you examined mine No. 6, Mount Carmel Coal Company, since the explosion which occurred there yesterday evening?

A. I have, on the north side only.

Q. Now, just state, Mr. Keegan, in a brief way, the result of your examination.

A. It was late when I got there last night, and they had recovered two of the bodies. They were covered up, and I did n't see either of them. As I proceeded, I could see that there was one timber knocked down near the shaft; a car was in the sump; and further several props were strewn in the entry. That's about all I noticed then. All our energy was devoted to recovering the other two bodies, which was done about quarter past eleven. In recovering them, there was four of our men became unconscious from the effects of the after-damp. The worst of those was Zimmerman and Jim Richards. After the bodies were brought out we concluded to wait until to-day before we would examine the shaft. I gave orders to Mr. Bell not to disturb anything, but only to attend to the ventilation. This was done, and Mr. Bell, Mr. Kirkwood, Mr. Hay, Mr. O'Leary, Mr. Murphy, Mr. Gillen, my brother and myself proceeded to make a strict examination of the north part of the mine. We went into the face of the main north, crossed over through the cross-cut to the west parallel. Right near the cross-cut I was shown where the body of Vaverick was found. About thirty feet south of that I was shown the place where the body of Dodson had lain. Six feet south of that was a room going west; in about forty feet, I should judge, there was two cartridges, one standing and one laying on the floor. Next room in the same condition.

In room 22 the shots had been fired. The room was in twenty-six feet from the entry. I could not determine how many shots were fired here. There was one shot, at least. Nearly opposite the mouth of room 22 I found a powder-box sitting in the entry. The box was locked and showed no signs of being disturbed. Some dust was dashed up against it, but there was no sign of fire. Another locked powder-box was sitting undisturbed between rooms 22 and 23. Now, here was something peculiar: Vaverick was found at the cross-cut, in the west parallel, and the fire, to get to him from the east, had to go through this cross-cut; in the middle of this cross-cut there laid a thirty-six-inch cartridge full of powder, which was broken in two, but the powder was not burned. In Nos. 20 and 21 there had been no shots fired. We went no further in that direction, but turned back to the main north. The main north entry—the shots had not been fired there, nor in room 21, going east off the main north, or off the east parallel of the main north. Found a cartridge standing against the rib in this entry. No sign of disturbance or fire here. Then went into room 21 off this entry; found one cartridge standing here, which had been placed on a cap piece. No sign of fire. Here a long string of paper was lying at the mouth of this room, and about forty

feet along the entry and in room 20 I found two shots, one tamped and the other not tamped. Neither had been fired. At the mouth of this room, and along the entry at this point, I found pieces of a tool-box that had been broken by the force of the explosion. In room 19 found two shots standing against the face which had not been fired. In room 19 found three shots all tamped and not fired. Then went into room 18; found two shots at face; one had been tamped and the needle pulled; there were five squibs in the hole ready to light, and three squibs laying around the mouth of this hole.

At the other shot the powder had been pushed in the hole and the fuse was sticking outside the hole about a foot. About twenty feet from the face of this room a loaded pit car was standing, and alongside of it I found two pit caps and lamps and one box of squibs. Some of the squibs were scattered around on the floor of the room close to the squib box; none of them had been lighted. This is the room in which Henry Zimmerman and Louis Benedict were found. They were found with their heads laying towards the face of the room, I am told. Went from here to room 17, where I found two shots, one tamped and with five squibs in hole ready to light. The other hole was partly tamped; the tamping-bar was lying on the floor of the room at the mouth of this hole. The props in this room were covered with dust and showed a little evidence of fire. An empty car was thrown off the track and across the rails near the entry switch. Went from there into room 16, where I found coal scattered around the place. I think there was only one shot in this room and it had executed the work it was intended to do. I then went into room 15, where I found a large amount of loose coal lying around. It was evident two shots had been fired here, and they had done good work, as the coal they were intended to shoot had been shot out. The props in this room had considerable dust on them, which looked like it had been thrown there with great force; some of them showed signs of being scorched or burned, especially those opposite the cross-cut leading from room 14 to this room. I then went into room 14, accompanied by the others, where we found considerable evidence of fire. The props were scorched and it was evident two shots had been fired. One was drilled six and a half feet and had only a five foot chance. It was drilled towards the right rib and was drilled at such an angle as to make it one and one-half feet in the solid, of course making it a tight shot.

The other shot was drilled from the center of the room, running slightly toward the left. This hole had been drilled six feet deep, at such an angle as to make it over seven feet thick at the point of the hole and about three feet at the mouth of the hole. While these shots seemed to have done fair work, yet the evidence is the strongest of anywhere that we have yet seen that this is where the explosion occurred. Not entirely satisfied, however, we went from 14 to numbers 13 and 12, and in going through the cross-cut we found all the props scorched on the side facing 14, and the coal charred facing the same direction. While the same evidence was obtained in numbers 15 and 16, the coal and props were charred facing 14, while the entry facing 14 contained great quantities of dust against the side of the entry. The shots in rooms 13 and 12 had done good work, and no other evidence of fire in those rooms except what I have already named. No. 12 was the last room on the entry going south, in the direction which they were going, all the rooms outside of that being worked out.

Q. Then, Mr. Keegan, from the examination you made of the north side of mine No. 6, it is your best judgment that the explosion was caused by the firing of but two shots in room 14 on the east north parallel?

A. I believe that is one of the causes, and the chief cause.

Q. From the examination you made of the mine, what other cause or causes did you attribute the explosion?

A. One other cause might be that all six of those shots went off together; there is a probability of it, and the expansion of the cold air, I think, had a good deal to do with it.

Q. What is your judgment as to whether or not there was sufficient foul air or after-damp in the mine on the north side at the time you went in the mine, on December 14, 1899, to cause death?

A. From the fact that five men dropped unconscious from being exposed to it for a couple of minutes, I have no hesitation to say that it would cause death in a very short time.

Questions by Morris Cliggitt:

Q. Had you ever examined Mount Carmel mine No. 6, where this accident occurred?

A. Yes, sir.

Q. About when?

A. On or about the 15th of July.

Q. What was the general condition of the mine, its arrangement, and improvements? What would you say about that?

A. The ventilation was good. It required timbering at several places, but the management promised to have that done.

Q. Well, in the arrangement of the mine and for the air did you find anything then, or on your examination last night and to-day, that would give any explanation from those causes for this accident last night?

A. No, I think not. The general arrangement of the mine seemed to be all right.

Q. What would you say, then, about these shots in room 14, off the east parallel, as to whether or not they were put in in a proper and workmanlike manner?

A. They are unlawful shots according to law, and one of them is at least three feet thicker at the point than it ought to be, and hence should not have been fired.

Q. Could the shot-firers have ascertained that?

A. With long experience they can generally tell with a glance at the needle. In this case it may have been a harder matter to determine, for we had every reason to believe that they were fired with fuse.

Q. What were the reasons?

A. The fact that those shot-firers had lit the rooms 15 and 16. They would have to then travel out on the entry to rooms 17 and 18, and they were in the act of tamping their different rooms when they must have been alarmed at the noise of the explosion. The fact that the man in 17 had dropped his tamping-bar and rushed over to room 18, and the man in 18 had come past the car and joined him, shows that they had been surprised and alarmed at the noise of the explosion. It would also show that the shots in room 14 had been lit with fuse, as a squib would hardly take so long to go off.

Q. Now, Mr. Keegan, from your examination and from your experience as a coal-miner, I wish you would state to the jury anything else, either as to your best judgment and opinion, or any other fact, that, in your opinion, has any bearing on the cause of this explosion, if you know of any.

A. Well, I believe, as I said before, that this explosion originated in room 14, and I think it more than probable that it has been augmented by the causes I have already spoken of. I further believe, from the evidence before us, that those two men, Zimmerman and Benedict, lived some little time after the explosion occurred, until they were asphyxiated by the gas. That's about all.

Q. This gas of which you speak, or the after-damp, would itself be caused by the explosion, would it not?

A. Yes, it's the residue.

Q. And in speaking of the gas or after-damp, that had no reference to the condition of the mine before the explosion?

A. None, whatever.

Questions by Mr. Boaz :

Q. In the course of to-day you made quite a careful examination of the mine, did n't you?

A. Yes, of the north portion.

Q. You didn't see anything, did you, Mr. Keegan, which would indicate to you that the mine had been operated and managed by its officers in other than a skilful, intelligent and workmanlike manner?

A. No.

A. B. KIRKWOOD, being sworn as a witness, testifies as follows:

Q. Mr. Kirkwood, how long have you been employed in and about coal-mines?

A. About twenty-five years.

Q. Were you present on the evening of December 14, 1899, when the bodies of Mr. Dodson, Mr. Zimmerman, Mr. Benedict and Mr. Vaverick were found in mine No. 6 of the Mount Carmel Coal Company?

A. Mr. Dodson's body had already been found and taken on top, and Mr. Vaverick's body had been found and they were bringing it out the main entry when I got in there.

Q. Did you help to recover the bodies of Mr. Zimmerman and Mr. Benedict?

A. Well, I was there when the bodies were recovered.

Q. From your experience as a miner, and judging from the condition of the mine when you went in and the condition of the bodies when found, what, in your best judgment, was the cause of death?

A. In my opinion the death of all four of those men was caused from after-damp—the results of the condition of the air after the explosion.

Questions by Morris Cliggitt :

Q. You made an examination of the mine last night and to-day?

A. I made an examination of the mine to-day.

Q. From our examination, did you reach an opinion or a conclusion as to what caused the explosion?

A. From the examination we made to-day, in which I took part, there was sufficient evidence for me to form an opinion that the primary cause or initial cause of the explosion was the firing of two very heavy, badly proportioned shots in room No. 14 going east off the east parallel entry going north, probably assisted by the immediate firing of four other shots in rooms 15 and 16.

Q. You heard Mr. Keegan's testimony?

A. I agree with the conclusions and opinions of Mr. Keegan, as stated by him in his evidence, almost exactly, and from the further fact or facts that are in evidence in room 14 would lead me to believe that the miner who is working in that room has been in the habit of putting in that class of shots, as there is a shot standing near the left-hand side of that room now that had evidently been fired at some prior date that has a five-foot drill hole and has about a five-foot chance, and is about three feet thick at the heel of the shot and about seven feet thick at the point. This shot failed to do any work whatever; simply cracked the coal from the pavement to the roof, and was placed in a very unskilful manner. For the further reason that there is a roll in the roof, running across the front of this shot, that would render it almost impossible to blow it out. And I think from the location of where the two men, Zimmerman and Benedict (I think

is the other one), was found, that the shots in 15 and 16 and 14 had been fired with a fuse, and probably all six of the shots went off nearly at once. I think that the shot-firer that was at work in room 17 and the one that was at work in room 18, as they evidently were, immediately upon hearing the explosion, tried to get out through room 18, and succeeded in getting partly out, when they were met by the after-damp and turned back towards the face, where they were overcome by the effects of it. One reason why it would take some little time for the after-damp to reach the two men working in 17 and 18 is because there is no break-through at any place between 16 and 17; all of the rooms connecting with 16 are directly connected with break-throughs clear down and including room 12, so that the only way the after-damp could reach these men would be by spreading from the main entry into rooms 17 and 18.

Q. The condition of room 14 and the manner in which the shots had been put in by the miner who worked there were such that the shot-firer could see that as well as you or any one else, could he not?

A. Well, to a certain extent that would depend on whether the man who worked in the room tamped the shots or whether the shot-firer tamped them. If the man who worked in the room tamped both of those shots with fuse, it would require rather close observation to ascertain the exact condition of them, although one of the shots is such a big, heavy, unusual shot, that it seems to me it should have caused the shot-firer to stop and investigate.

Q. I mean the general condition of the room and the former shots to which you refer. He could see them as well as any one?

A. Yes, sir.

WILLIAM MURPHY, being sworn as a witness, testifies as follows:

Q. How long have you lived in Frontenac, Mr. Murphy?

A. About five months, I believe.

Q. You work for the Mount Carmel Coal Company in mine No. 6?

A. Yes, sir.

Q. Were you working there on December 14, 1899?

A. Yes.

Q. Did you assist the Mine Inspector, Mr. Keegan, Mr. Kirkwood and others in making an investigation of the north side of that mine on this date?

A. I did; a portion of it.

Q. What, if anything, did you find in your investigation of the north side of mine No. 6 that, in your judgment, caused the explosion that took place there on the 14th, and which resulted in the death of Mr. Dodson, Mr. Vaverick, Mr. Zimmerman, and Mr. Benedict?

A. When I went down in the shaft to-day along with Mr. Gillen, the other portion of the party preceded us for some time. We went to the face of the straight north entry. We proceeded from there to the east parallel entry, where the bodies were found—Zimmerman and Benedict. We then proceeded from there to try and locate where the explosion had happened. We went into No. 16 room; the shots had been fired there; did n't show any indication of an explosion, but in going toward the break-through to 15 room we could take notice of the props—they were scorched on the south side. Went up into 15 room; there was nothing to show us that an explosion happened there. In going through the break-through toward room 14 the props were all scorched. In going up to the face of room 14, it showed more indication there of how the props were scorched—that was the place where the explosion happened. We found two shots there that had been fired just as some of the others have stated here. Mr. Kirkwood stated it accurately. I could n't go over the ground again

and make it any better. There was some part of us went south to rooms 13 and 12. Going that way the props were all scorched on the north side, so that convinced us more firmly that room 14 was where the explosion took place.

Q. From the examination you made of the drill holes or shots in room 14, would you consider that these shots were put in in a good, workmanlike manner?

A. No, sir. I would state in regard to that, that no practical miner would put in such shots, because it's not safe at any time. I will state further, that I have had a conversation with the gentleman who put those shots in, and while he may think that I thought he told the truth, I know that he lied to me; because ignorance it may have been as to the way he puts the shots in, but ignorance it could not be about the amount of powder he put in, and, in my opinion, if the amount of powder he claims to have put in was all he put in there was no wonder there was an explosion.

Q. What amount of powder did he tell you he put in?

A. In the hole that we estimated as six feet deep he claimed to have put one foot and a half. In the hole that we estimated had been six feet and a half deep he claimed to have put two feet and a half in.

Q. In a hole drilled six and a half feet, or the same kind of a drill hole you found in room 14, what would be the amount of powder that the practical, skilled miner would use?

A. Three feet and a half.

Q. Then these drill holes you found in room 14 were of an unusual depth and were not drilled in a skilled, workmanlike manner and in a way a practical, skilled miner would drill them?

A. No.

W. P. GILLEN, being sworn as a witness, testifies as follows:

Q. Where do you live, Mr. Gillen?

A. Frontenac, Kan.

Q. How long have you lived here?

A. I will be here a year on the 4th day of January, 1900.

Q. Are you in the employ of the Mount Carmel Coal Company at this time?

A. Yes, sir.

Q. In what capacity.

A. As a miner.

Q. In what mine operated by that company do you work?

A. At mine No. 6.

Q. Were you present and assisted Mr. Keegan, Mr. Murphy, Mr. Kirkwood and others in their examination of the north side of mine No. 6 on this date?

A. I was.

Q. You may state, from your investigation, what, if anything, you found that would cause an explosion, in your judgment.

A. Well, when I arrived at mine No. 6, this forenoon, accompanied by Mr. Murphy, the other portion of the investigation party had gone down. We then went down to the bottom and we proceeded to the face of the straight north entry, where we met the rest of the investigating party and examined the entry, and we found nothing here that would indicate any cause of an explosion, as cartridges were made up and unharmed, and not even the paper, nor anything pertaining to them, even scorched.

Then we crossed over into the east parallel entry to the place where the bodies of Zimmerman and Benedict were found. We then made investigation as to what point or place the explosion could have occurred. We started up into room

17 and we found that had been a hole tamped and squibbed; another hole was not quite tamped, with a fuse to it, indicated that some one had been working there and had not finished tamping those holes. We then went into room 16; we found that shots had been fired there, and that nothing in those shots would have caused an explosion. We made examinations from there, across to room 15; we also found that shots had been fired in room 15, and that the investigation showed no evidence of an explosion that could have happened by those shots. We then crossed to room 14. We found on the way, crossing in the direction of 14, props were scorched and burned coal and coke, and proceeded to 14, and a careful examination was held there by the entire force of the investigation; and to my judgment it seemed to me that, from the investigation, the explosion had occurred in room 14; also the investigation led me to believe that one of those shots had been fired by a fuse, as at one of the holes there was rimlets of squibs indicated that that shot had been fired by squibs. At the other shot there was n't any pieces of squibs to be found. Then I believed that shot must have been fired by a fuse. The shots, to my judgment and experience, were not drilled in a practical manner, as would have been done by an experienced miner. Also, the one shot in particular, we measured the depth of it, and it was drilled, I should judge, twenty inches or two feet too far into the solid rib; and we concluded after, consultation held, that 14 must have been the place where the explosion occurred, to our judgment.

Q. How many years have you worked in and about mines?

A. 14 years.

Q. And you have been a practical miner that length of time?

A. Yes, sir, 14 years past.

Q. And in your best judgment these two shots put in room 14 were not put in as a practical, skilled miner would put them in?

A. No; they were not. There is an other statement there I would make. I also held a consultation this evening with the man working that room, and the amount of powder he claims to have charged those shots with is sufficient to cause an explosion at any time; but he stated that he did not charge those shots; that he left the cartridges charged and that the shot-firers tamped them; where it seems to me if they did they made a very bad mistake.

Q. Was that drill hole of an unusual depth?

A. Yes; according to the chance it had, it was an unusual depth for that hole to be drilled.

Q. In firing a shot in a drill hole the depth of the one you have described in room 14, what quantity of powder would a practical, skilled miner used?

A. To my judgment, a practical, skilled miner would not have attempted to use any powder in it; that is to be safe, or have any one in safety that would be firing the shot.

Questions by Mr. Cliggitt:

Q. How did you happen to go down in mine No. 6 to-day, Mr. Gillen?

A. I was deputized to go there by the Mine Inspector as a witness to the feature of the examination, and use my judgment and opinion as to how or what was the cause of the explosion.

Q. Do you know or in your judgment have you any opinion as to any other cause from the shots fired in room 14 off the east parallel of the north entry that could have caused that explosion?

A. To my best judgment, there is nothing else that I could see would have been the cause of the explosion only from the firing of these shots.

Question by Mr. Boaz :

Q. Is there anything further that you would like to say in regard to the matter, Mr. Gillen?

A. I believe not. I agree with the statement of the other witnesses, Mr. Kirkwood, Mr. Keegan, and Mr. Murphy.

STATE OF KANSAS, CRAWFORD COUNTY, SS.

Joe Borrello, of lawful age, being first duly sworn, deposes and says: That he worked in room No. 14, on the east north parallel entry, at mine No. 6 of the Mount Carmel Coal Company, on the 14th day of December, 1899; that he did not tamp the shots in said room on that date, but left the shots for the shot-firers to tamp; that he put the cartridges in two shots; that for the shot on the left-hand side he put one and one-half feet of powder, and for the right-hand shot he put two feet of powder.

(Signed) JOE BORRELLO.

Subscribed and sworn to before me, this 15th day of December, 1899.

J. J. CAMPBELL, *Justice of the Peace.*

STATE OF KANSAS, CRAWFORD COUNTY, SS.

An inquisition holden at Frontenac, Kan., in the above county, on this 15th day of December, 1899, before J. J. Campbell, acting coroner for Crawford county, Kansas, on the dead bodies of Frank Vaverick, Eugene Dodson, Henry Zimmerman, and Louis Benedict, here lying dead before us, the jurors whose names are hereunto subscribed. The said jurors on their oath do say: That Henry Zimmerman and Louis Benedict came to their death by suffocation of after-damp in mine No. 6 of the Mount Carmel Coal Company, in room No. 18 of said mine, in the east parallel of the north entry; and Frank Vaverick came to his death by being burned, in parallel west of north entry of said mine; Eugene Dodson came to his death by injuries received and suffocation in the aforesaid entry; the above disaster being caused by a windy shot being fired in room 14 off the east parallel of the north entry of said mine, on the 14th day of December, 1899.

In testimony whereof, the said jurors have hereunto set their hands, this 15th day of December, 1899.

J. S. PATTON, *Foreman.*

THOMAS W. OLIVER.

E. B. ROBINSON.

E. N. COPPLE.

MARK PAVEY.

C. DAVIS.

Subscribed and sworn to before me, this 15th day of December, 1899.

J. J. CAMPBELL, *Acting Coroner.*

STRIKES.

DURING the year 1899 three miners' strikes occurred in Kansas. Two of them occurred in Leavenworth, and one, which is still pending, in southern Kansas. Of the two first named, one occurred in January, and lasted about two weeks. The matter involved was relative to the screens. A settlement was effected—an agreement entered into by the company and the men. This agreement gave the miners eighty cents per ton for screened coal, and as twenty per cent. of the total amount was nut and slack, this practically gave the miner sixty-four cents per ton of 2000 pounds for all coal produced. The miners continued to work at these rates until August. During the intervening time the United Mine Workers of America called a conference with the operators of southern Kansas for the purpose of agreeing on a scale of wages that would be of mutual benefit to the miners and their employers. All companies favorable to the union were represented at this conference. A scale was finally adopted, and a written agreement entered into which gave the union miners of southern Kansas sixty cents per ton the year round for mine-run coal. This was an advance on the price that had been paid of about five cents per ton. They also conceded the eight-hour day, and an advance on the price per hour for day work, but the price paid for mining in Leavenworth remained unchanged. This caused considerable dissatisfaction among the Leavenworth miners, who believed they had been discriminated against. This dissatisfaction increased until August, when the miners made a formal demand for eighty cents per ton of mine-run coal, which the companies refused. The miners then suspended operation on August 17, and remained on strike until October 3. The miners at this time compromised by accepting seventy-six cents per ton for mine run, and they resumed work October 4.

In Osage county a strike was averted by a narrow margin. A delegate convention of miners was held in Burlingame, September 7, at which all the mines in Osage county were represented. At this convention they decided to demand an advance of twenty-five cents per ton. This demand the operators refused to concede, but offered an advance of ten cents per ton. This proposition was balloted by all the miners in the county, and a motion to accept the ten cents advance was carried by a small majority. A few weeks later they secured another advance of fifteen cents per ton, and thus a strike was averted.

While the foregoing strikes were of the utmost importance in the

localities in which they occurred, the strike in southern Kansas is vastly more significant, on account of the number of men involved and the importance of the points at issue. The Fourteenth Annual Report of the Kansas Bureau of Labor contains a full account of the origin and progress up until June, 1898, giving the most elaborate and minute details of meetings, conferences with the operators, written agreements entered into by the operators favorable to the unions, miners' strike against the "Big Four," the importation of negroes from Alabama, West Virginia and Illinois to take the place of the striking miners, and other details. And although the bureau kindly placed all this matter at my disposal, I did not avail myself of the privilege of reproducing it in my report, believing, as I do that these facts are too well known by this time to require republication. I will, therefore, touch as briefly and concisely as possible on the leading phases of this strike.

A local organization of the United Mine Workers of America had not long been established at Hartshorne, I. T., when a number of their members were discharged for belonging to the union. The others came on strike to have them reinstated in their work, and they in turn were discharged. This aroused the interest and indignation of the surrounding local unions, and soon all the union miners in the Indian territory were on strike. Arkansas, being competitors in the same market, also became involved and the miners there also suspended work. At first this was a sympathetic strike, but after they had been on strike a short time a schedule of grievances was drawn up and an adjustment of those was also included in the demands of the striking miners. In the minds of many this is considered to have been a grave mistake on the part of the strikers, as it is claimed they should first have established a recognition of their right to belong to a union before they attempted the adjustment of any other difficulties. On the other hand, the strikers claim that, as all their demands were just, that that was the time to present them and have one strike determine all.

The Kansas miners in the meantime were contributing funds to the striking miners in Arkansas and the territory. As a number of the operators in both the territory and Arkansas also owned mines in Kansas, and were filling the contracts of these mines with Kansas coal, a movement was set on foot to have this stopped. The final result of a number of conferences with operators and miners of Kansas was, as before stated, an agreement to work for those who had signed the agreement and suspend work at all other mines. The latter comprised the mines operated by the following coal companies: The Kansas & Texas Coal Company, the Central Coal and Coke Company, the

Southwestern Coal and Improvement Company, the Western Coal Mining Company, and a few smaller coal companies. All of the foregoing became known as the "Big Four." The decision to suspend work at these mines was reached in accordance with the ultimatum uttered by National President Mitchell, of the United Mine Workers of America, in his speech at Pittsburg.

Then ensued the most determined struggle ever known for the right to belong to a union; for this is virtually what it amounted to, as there was little difference in the price paid for mining. The companies shipped in negroes by the train load, built barricades around their property, and stationed guards armed with Winchesters and revolvers all around their strongholds. In addition to these precautions, they issued injunctions against the strikers and others, restraining them from trespassing on the company's property, and, as the majority of the mining camps are built on each side of the public highway, it may easily be seen the far-reaching effect of these injunctions and the restraint it placed on the liberties of the people. In the meantime the strikers had not been idle. They had contrived to have interviews with a number of the imported negroes, and, after showing them the error of their way, induced hundreds of them to leave; but as soon as the injunctions were placed against the strikers, it precluded the possibility of such interviews.

An attempt was then made to restrain the coal companies by injunction from arming these imported hordes with Winchester rifles and other implements of war, and from building forts or stockades in a time of peace, as it was considered a menace to the health, safety, peace, and lives of the citizens of a peaceful community. Needless to add, the attempt was futile. The companies were unrestrained. They were allowed to adopt their own methods of subduing the strikers, and the fact that the bloody scenes witnessed in Illinois were not reproduced in southern Kansas is entirely due to the peaceful methods of the strikers, and their Spartan fortitude and forbearance under the most trying humiliations and indignities. It would be almost impossible to enumerate all the humiliations to which they were subjected and the different localities in which they occurred. I will relate one incident that will serve as an illustration; it occurred in Mineral, a mining town about four miles west of Scammon. The strikers lived in one part of the town of Mineral, and the imported stock in another. Although this latter class had been working there for some time, they had held aloof and never made any offensive demonstrations against the striking miners, until one day when the strikers had left the town in a body to attend a mass-meeting which was held in Scammon; then the cowardly ruffians came forth, and, not con-

tent with discharging their guns over the heads of those helpless women and children, who ran screaming into their homes, they followed them, and leering into the windows grossly insulted them, in language unfit for publication, but which the terror-stricken women and children were compelled to listen to.

Imagine, if you can, the feelings of those indignant and thoroughly enraged miners on their return from Scammon—the men who had pledged themselves to carry on this struggle in a peaceful and lawful manner. Is it any wonder that some of the most impetuous had to be restrained by their more cool-headed brethren from taking the law in their own hands and wreaking summary vengeance on the vile, sacrilegious fiends who had dared attempt to desecrate the sanctity of their homes? This restraining influence is, no doubt, commendable; but I ask any American citizen, from the governor down to the “man with the hoe,” if under the same circumstances he would not feel justified in putting an end to the existence of such miscreants? If such is the feeling of loathing and horror inspired by their acts, what must be said of the law giving the power to corporations to rake up this scum of the earth and dump them by the train load in the midst of law-abiding citizens, without even the slightest sanitary precautions against smallpox or other contagious diseases? Not content with doing this, the corporations arm these hirelings to the teeth, on the pretext of having their property protected, and allow them to roam at will, and then with cool effrontery enjoin the turbulent (?) strikers from trespassing!

To resume: The strike situation, as described by the report of the Kansas bureau of labor, had changed but little up to the end of the year, and at the present writing all the striking miners are crowded into the union mines, where they have been working all winter, trying to make a living without the aid of the commissariat. This is an institution which was established by the union miners at the inception of the strike, and maintained by funds paid in by the union miners of Crawford and Cherokee counties. When we consider that the strikers were called out by the national head of the organization, it seems strange, to say the least, that the whole burden of supporting them should devolve upon the union miners working in these two counties, but such is the case. This may have been caused by the easy manner in which the money was obtained from these miners, who are willing to make any sacrifices in order to establish their right to belong to a union. The officers of district No. 14, United Mine Workers of America, with the consent of the miners, had the operators deduct one dollar per month off each miner; then it was raised to two dollars per month. There was no discrimination. If a working miner took

a striking miner in with him and shared his work with him. they were both charged alike, the full amount for each, the only exception to this rule being when the miner did not have anything left after his store bill was deducted.

Up to date, each union miner has been taxed about \$10, at least. This would aggregate \$12,000 in Crawford and Cherokee counties, while the amounts paid in by Leavenworth, Osage and other parts of the state, all put together, would not aggregate \$1000. What is the meaning of this? Why is it that the miners of such a congested district, where the men are crowded together like sheep in a fold, are taxed so far beyond their strength, while other parts of district 14 are allowed to go without taxation? If it is a case of whipping the tired and willing horse, it is time that such a method should cease. The union miners of Crawford and Cherokee counties have engaged in this struggle with a determination to win, and win they surely will, if they are treated fairly by their organization.

Would it be considered interference by me to suggest that the executive board of district 14 use their utmost endeavor to make this struggle really what it purports to be, a struggle of national importance to the United Mine Workers of America, and have all the members of the association taxed equally, instead of confining the taxation to the locality in which the struggle for justice is being maintained?

RECOMMENDATIONS.

UNDER this head, I wish to draw attention to the dangers incurred by men engaged in the hazardous occupation of shot-firing and recommend a course of action that will be beneficial to them and reduce the danger to which they are exposed. My immediate predecessor recommended that the shot-firer be allowed to fire only one shot in a room on each round, and make as many rounds as there are shots in a room, until all the shots in the mine are fired. This plan is not practical, when we consider that the most arduous part of the shot-firer's labor is traveling around the faces in a space averaging three feet in height. Then, again, the ventilating current does not sweep around the faces of the workings, as in long-wall, so that a certain amount of the noxious gases would be found in each room when the second round was being made, and might be the cause of the shot-firer's death from suffocation.

I believe that, by observing the necessary precautions in regard to examining squibs and testing the needle hole for gas, a shot-firer can safely light two shots and get out of danger, but when there are more than two, the shot-firer incurs a great risk in attempting to light them.

A good deal has been said about the careless and hasty manner in which the shot-firer does his work, and to this is ascribed nearly all the accidents that have occurred, and great emphasis is placed on the fact that he is paid for ten hours' work, and that there is no necessity for him to attempt to do the work in less time. As to this latter statement, I do not think the shot-firer need have any conscientious scruples about taking his two and a half dollars, even if he can complete his shift in two hours and keep himself out of danger. My observation leads me to the belief that more shot-firers are hurt in their anxiety to lose or miss no shots. This anxiety leads him to take risks that he would not otherwise take. For example, there may be three shots in a room, two of them being tamped, and one, being wet, is left for the shot-firer to tamp. After he prepares them, he lights all three, and rushes to a safe place until they go off. If only two of them go, nine shot-firers out of ten will be sure to go back and endeavor to get the other off before the powder gets wet. If he is successful, nothing more is heard of it. If he dies in the attempt, his death is attributed to his own carelessness and hurry to get home. Nothing is ever said of the unselfish motive that prompted him to go groping and gasping

through that thick, blinding, suffocating smoke—his desire to do justice to the miner.

For the benefit of those unacquainted with mining methods in the southern Kansas district, it may be well to state that the shot-firer enters the mine after the miner has quit work, and each shot-firer lights the shots for about fifty miners, the shots having been previously prepared by the miner. If the shot-firer misses a shot, it means a loss to the miner, as there are about four pounds of powder to each shot, which, under the unjust order of things, costs the miner eight cents per pound. In addition to this is the consequent loss of time and lack of coal to complete his next day's work. As the shot-firer comes from the ranks of the miners, he understands what this means. This is no fancy picture, but is founded on grim facts. Just a short time ago I was called upon to investigate the death of two fine young men who had been suffocated while attempting to get a shot off that had missed fire. It had been their proud boast that they had never missed a shot. A majority of the accidents that happen to shot-firers are caused by this practice of going back to fire shots that have missed. Therefore, in justice to themselves and their families, I would earnestly exhort them to discontinue this practice. There are enough dangers to guard against in the regular routine of their work without this additional one.

Premature explosions of shots have caused a number of fatal and non-fatal accidents in the last ten years. Those were caused by defective squibs, gas at the mouth of the hole, drilling out shots that had missed, and have sometimes occurred in tamping. It is seldom that a victim of this latter kind of accident ever lives to tell the tale. I know of only one instance, that of James McGregor, of Chicopee, who had both his eyes shot out and was otherwise severely injured. This occurred about six years ago. At the present writing, although blind, he is in the best of health and spirits.

Many shot-firers have been burned severely by shots throwing fire (heat, flame). As the fire generally travels against the air-current, the best means of avoiding this danger is to get into the face of the next room, providing there is no air-course there, and in doing this he must be sure that there is no shot in the rib of the room he has just left that may be likely to shoot through on him. Enough has been said to show the unavoidable dangers to which a shot-firer is exposed without incurring needlessly the additional risk of going back in the smoke.

And now we come to the mine explosion, the ever-present dread of the shot-firer. In all the experiments that have been made to determine to what extent coal-dust is a factor in mine explosions, it has

always been deemed expedient to use a fan to furnish a good supply of fresh air; and one of the results of numerous experiments made by Mr. Hall is here given: "That a ready supply of oxygen, such as is supplied by brisk ventilation, has the effect of making coal-dust explosions more probable and more severe." Experiments made by others without the aid of mechanical ventilation have always failed to develop the explosive qualities of coal-dust. No special significance has ever been attached to this important fact in attempting to apply a remedy, probably because it was thought that a "brisk ventilation" was one of the necessary requirements of a mine (as it certainly is); therefore, anything tending to diminish the supply of oxygen was abandoned as impracticable.

However it may be elsewhere, the mining law relating to shot-firing in Kansas makes it possible to have two separate degrees of ventilation without injury to any person employed, and it will allow of no excuse by any employer for having an ill-ventilated mine. In fact, the better equipped the mine is for ventilating purposes, the more easy it will be to observe those separate conditions. Without further circumlocution, I will endeavor to make my meaning plain in recommending the observance of the following rules for the guidance of both the operator and the shot-firer, which I shall insist upon being strictly observed:

1. That the miners must all be out of the mine at least one hour before the shot-firers are allowed to go into it, and during that hour the fan must be run at its maximum speed in order to clear the atmosphere of the mine of smoke, foul air, etc.

2. When it is time for the shot-firers to go down in the mine the speed of the fan must be reduced to its minimum, or just enough to overcome the inertia of the air and keep it moving at the slowest possible rate.

3. That the shot-firer light no more than two shots in any one room.

4. That on no account must a shot-firer attempt to go back on a shot that has missed fire until all the smoke is cleared out of the mine.

5. That the shot-firers all meet on top after the round of the mine has been made, and on no account shall any of them go back into the mine to fire a shot in less than two hours time, during which time the fan will again be run at full speed, and the same precaution observed as contained in section 2 of these recommendations, before the shot-firers reenter the mine.

6. That the mine boss or superintendent shall rigidly examine each applicant for shot-firing as to his qualifications before hiring him,

making him give a practical illustration of what he would do if gas was found at the mouth of a hole, how he would determine whether a squib was defective or otherwise, what he would consider a dangerous shot to fire, etc., and a record of such examination kept on file. If the applicant is found incompetent in any particular, upon examination, the mine boss or superintendent must refuse to hire him for that work.

7. That it shall be the duty of the engineer or fireman to attend to the fan—see that it is oiled and in good working order before the shot-firers go on duty, to see that it is regulated according to the recommendations here given, and positively allow no interference with fan during the shot-firers' working hours.

As all are alike interested in the prevention of accidents to shot-firers, I do not anticipate any trouble in having the foregoing rules adopted at all mines.

THE SINGLE-ENTRY SYSTEM.

THIS is a subject that has been handled by all my predecessors and recommendations regarding it have been made at various times, and yet nothing has been done by the legislative bodies to abolish the single-entry system. It is almost impossible to ventilate a mine that is run on the single-entry system for any length of time, no matter how strong the initial current may be, as the curtains placed at the mouths of rooms can hardly be made close enough to prevent the escape of the air to the return air-course before it has reached the face of the workings; consequently the miners suffer dreadfully for the lack of fresh air. No one can have any idea of the suffering it entails except the man whose poverty compels him to work in those mines day after day and week after week. Even with the strictest attention, these mines cannot be kept up to the standard in ventilation that is obtainable in mines run on the double-entry system, and strict attention in those holes is the exception rather than the rule.

The single entry, I am happy to state, is being abandoned gradually, and nearly all new mines are worked on the double-entry system, but the few that are yet in existence working under the single-entry system would require the attention of the Mine Inspector daily to see that the numerous curtains are kept in place. I therefore recommend the passage of a law which would enforce the observance of the double-entry system in all mines worked by the room-and-pillar method. And let at least one overthrow be built in each mine, and four separate currents of air be maintained in all mines that have been operated six months. And I further recommend that a sufficient penalty be imposed for non-compliance with this law.

FATAL ACCIDENTS.

No. 1. Fatal accident to Patrick McLaughlin, at the Central Coal and Coke Company's Mine No. 7, at Scammon, Cherokee county, January 4, 1899. This accident happened while George T. McGrath was Inspector. The following, which he handed to me, is an account of the accident:

Patrick McLaughlin was killed by fall of slate about six feet from face of room, upon the rib of a horseback in pot shape. Size, 6 feet long by 5 feet wide, and about 14 inches thick in the center, and tapered to all sides. Accident occurred in the first room off seventh east entry, on north side of mine.

No. 2. Fatal accident to John Moravitz, at the Southwestern Coal and Improvement Company's mine No. 7, at Mineral, Cherokee county, January 25, 1899.

This accident also took place while Mr. McGrath was Inspector, and as he did not give me any detail of the accident I was obliged to get an account of it from the company in whose mine it occurred. It seemed that at the usual time of commencing work John Moravitz had gone to work in his room, and was engaged loading a car when a large rock weighing about three tons fell from the roof, killing him instantly.

No. 3. Fatal accident to Conner Kelly at the Mount Carmel Coal Company's mine No. 6, at Frontenac, Crawford county, March 18, 1899.

None of the details of this accident were turned over to me by my predecessor; but as I was intimately acquainted with Mr. Kelly, I remember well the cause of the accident and the gloom that it cast in the little city of Frontenac, and in other mining camps where Mr. Kelly was well known. At that time mine No. 6 was just being opened up. A double shift of miners were employed, to push the work and develop the mine as speedily as possible. Mr. Kelly had charge of one of those shifts of miners, and it was part of his duty to look after the work and fire the shots of the miners working under him. On the night of March 18, he had gone to work as usual to fire the shots for the shift. He went into a room and lighted one of the two shots that were in there, and it is presumed he was in the act of lighting the other one when the one he had already lit went off, and hurled him against the rib of the room, killing him instantly. Deceased leaves a wife and large family.

No. 4. Fatal accident to George Molton, at J. R. Crowe Coal Company's mine No. 1, at Stippville, Cherokee county, May 1, 1899.

This accident also took place before I assumed the duties of my office, and, as no account of it was turned over to me, I am unable to give the details of the accident.

No. 5. Fatal accident to Harry Thomas, at the Leavenworth Coal Company's mine, at Leavenworth, on June 12, 1899.

This accident took place before I assumed the duties of this office, and I did not learn of it until the company at whose mine it occurred sent in their report at the end of the year. I am therefore unable to give the details. The following is the report made to this office by the company: "Harry Thomas, aged fifty years; married; residence, Fourteenth street and Metropolitan avenue, Leavenworth; engaged as assistant engineer; fell under fly-wheel of engine June 12; died from injuries June 13."

No. 6. Fatal accident to Jeff. Tripp, at the Kansas Commercial Coal Company's mine, at Fuller, Crawford county.

I was surprised when this company sent in their report to find an account of this accident. It was the first intimation that I had received of it. It seems, according to the report, that it took place on the 16th of July, which was just sixteen days from the time I had taken my position as Inspector, and it must have happened on the very day before I left home to visit the state penitentiary mine. The report sent to this office at the end of the year stated that Jeff. Tripp had been killed by a fall of slate, and underneath this were the words, "No fault of company." I want to say right here that I will not tolerate such a manner of doing business from any company. The law calls for the Inspector to be notified when an accident occurs, and not six months after, and I shall call on the assistance of the attorney-general of the state to enforce this law in the future.

No. 7. Fatal accident to Mike Smith, at the Mount Carmel Coal Company's mine No. 6, at Frontenac, Crawford county, July 17, 1899.

At the time of this accident I was on my way to Lansing, in response to a dispatch from Governor Stanley requesting me to go there and make an examination of the state shaft at that place. While on the train the conductor handed me a dispatch from Joseph Fletcher, superintendent of the mines at Frontenac, which stated that a man had been killed in mine No. 6. At that time I had not been granted permission from the executive council to appoint an assistant, but the law allowed me the privilege of appointing a substitute in a case of emergency like the above. I therefore wired from Olathe to my brother Francis, and instructed him to proceed to mine No. 6, Frontenac, and investigate the cause of the accident, and report back to me. While at Lansing I received the following communication, which explains itself:

PITTSBURG, KAN., July 18, 1899.

DEAR BROTHER—I received your message at Pittsburg, and went direct to Frontenac, arriving there at 6:15 P. M., July 17.

I first went to view the body at his home, and while there made inquiry as to what steps had been taken before I arrived. I learned that Justice of the Peace Brayman (acting coroner) had been there, and, after examining some witnesses, had decided that an inquest was unnecessary, and I understand, according to law, the coroner is the party to decide in such cases. I then selected a committee of miners, viz.: John Halliday, Hugh McWilliams, and W. P. Gillan. Accompanied by the above-named committee, and Joseph Fletcher, superintendent, John O'Leary and Edward Flynn, foremen, I went down into the mine to investigate the cause of the accident. The following is the report: On July 17, about 3:30 P. M., one Mike Smith, fifty-four years of age, employed as air man and timber man at mine No. 6 of the Mount Carmel Coal Company, at Frontenac, Kan., while in the performance of his duty examining the roof preparatory to timbering it, in the east parallel to the main south entry, opposite room No. 4, a rock measuring five feet long by six feet wide and six inches thick fell on him, breaking his back and otherwise injuring him, death resulting almost instantly. I took the statement of John O'Leary, who was beside Mr. Smith when he was killed, and who barely escaped himself, a piece of rock actually striking him, which, luckily, only scratched him. I also took the statement of the miner, Mr. Gillan,

who helped to take the unfortunate man from under the rock. Their statements, together with my own observations, showed clearly that the occurrence was purely accidental. The deceased leaves a wife and large family.

FRANCIS KEEGAN.

As soon as I got through with my work in Lansing I hurried back and visited this mine, in order to satisfy myself in regard to this accident, as I was personally acquainted with the unfortunate man and knew him to be one of the most careful, cautious and practical miners I ever met in a mine. After looking at the place where he was killed, and hearing the statements of the miners who went to his assistance, it was evident to me that Mr. Smith's death had been caused by one of those unavoidable accidents that too often occur in coal-mines.

No. 8. Fatal accident to William Humble, at the Humble Coal Company's mine, near Turck, Cherokee county, September 19, 1899:

On hearing of this accident I went to the mine to investigate the cause. I there learned that, on the above-named date, at about ten A. M., while Mr. Humble was laying track in the back entry to main north of this mine, a slab of slate fourteen feet long by six feet wide and two and one-half inches thick fell on him, breaking his leg and otherwise injuring him, from which injuries he died four hours afterwards. On examining the place where the accident occurred, I found it to be a place of about three and one-half feet high where the slate had fallen. I took the statements of W. H. Powers and William Humble, a nephew of the deceased. They had helped to take Mr. Humble out from under the rock.

Mr. Powers's statement is as follows: "I was working in the mine at the time of the accident. I knew deceased but slightly. I assisted others to take Mr. Humble out after he was hurt. He spoke quite rationally then, and no one thought the accident would result as it did. The mine resumed work and worked until two o'clock, when word came that Mr. Humble was dead. In my opinion Mr. Humble's death was purely accidental."

William Humble's statement was as follows: "I have known deceased all my life, he being my uncle, and knew him to be a good, practical miner; in fact, the greater part of his life was spent in the mines as mine foreman. At the time of the accident he was engaged as track-layer. He was working on the back entry to the main north, and had laid one rail down, and was going after another rail, which he intended laying; a slab of rock fell on him while he was passing under it. His leg was broken by this rock, but he did not seem to be very badly hurt. He spoke quite rational when we got him out. I had no idea then that he would die from his injuries."

This is only another case of how little it takes to kill a man in some positions. I confess when I looked at the cause of this man's death I could hardly credit it. 'Tis true it was a large piece of slate, but it was only two and one-half inches in thickness, and if he was walking under it at the time, as his nephew stated, his back must have been close to the roof, when the place was only three and one-half feet high, and it would not have any distance to fall before it struck him. He must have been injured internally, as the injury to his leg would not have resulted fatally in so short a time. I understand that Mr. Humble was seriously hurt three times before he met with this accident which caused his death, and his relatives are of the opinion the injuries received before helped to hasten his death. The deceased was born in England, and was fifty-four years old. He came to this country in 1879, and had since then lived in and around Weir City, where he was well known and highly respected. He leaves a wife and five children, two of whom are married.

No. 9. Fatal accident to John Spindal, at Southwestern Coal and Improvement Company's mine No. 7, at Mineral, Cherokee county, September 25, 1899.

This man was buried when I heard of the accident which caused his death. It seems that a rock had fallen on Mr. Spindal, while he was in the act of mining some coal. He was removed to his home, and the officials of the company stated that they were under the impression that he was getting along nicely and had no fear for his recovery, and besides they did not know where to find me; hence they did not send any notification when Mr. Spindal got hurt. But when he died, a week later, they wrote a letter to this department and addressed it to Topeka. I received this letter when I returned from Mineral, after making an investigation into the cause of the unfortunate man's death. This company and every other company that does not report an accident, no matter what the nature of it may be, as soon as it occurs, makes a mistake by such omissions, as it is absolutely necessary that every accident that takes place in and around the mines of the state should be reported at once to the Inspector. This would enable the Inspector to investigate the cause of all accidents that take place in and around the mines of the state. It would also aid him to make an intelligent report of these accidents.

When I arrived in Mineral and went into the mine to investigate the cause of this accident, I found all trace of the accident was gone. The rock had been cleaned up, and the place kept going by another man working in it. I then took the statement of a man who was working close to Mr. Spindal, where the accident occurred. His statement was as follows: "My name is Bert Redicke. I have worked in this mine about three months. I was acquainted with John Spindal, who got hurt in this mine on September 25, and who has since died. I was in his working-place on the day of the accident, and found him digging coal from beneath a large rock that was resting on the coal. I cautioned him about working there, as I thought the rock was liable to come down any minute, but he paid very little attention to me, and kept taking the coal from under the rock. The only precaution he took was to put up a few short props under the rock, which he thought would hold it while he removed the coal. He then intended to knock the props out and let the rock down. I left him working in this way and returned to my own place, and was working there when, at about four o'clock, Mr. Spindal's son, who was working with his father, came running to me and said that his father had been caught under the rock. I went with the boy, and with the assistance of others we pulled Mr. Spindal out from the rock that I have been speaking of. He was crushed about the hips and back, and died from his injuries on October 1, at about ten A. M. In my opinion the accident was the result of Mr. Spindal's own carelessness, and there was no one to blame but himself."

The statement of the boy, Tony Spindal, was as follows: "I am the son of John Spindal, and, at the time that my father met with the accident which caused his death, I was working with him in a cut-off entry from the second east north to the third east north. My father was sitting on the floor of his place digging coal from under a large rock that was resting on the coal, when suddenly the rock came away and caught him. I ran for assistance at once, and my father was taken out and brought home. We did not think he was hurt very bad, but he must have been, as he died on Sunday, October 1."

C. E. Bramlette's statement is as follows: "I have worked in this mine about a year. I have known John Spindal for six months before he met with the acci-

dent on September 25 which resulted in his death on October 1. I went into the place where he worked the day after he was hurt. I examined the place carefully, and the indications showed that the rock that fell on Mr. Spindal had been resting on a block of coal before it fell. He must have been taking the coal from under this rock when it came down on him. I found the pick and shovel he had been using; they were buried by the rock. The pick handle was broken and the shovel smashed. After careful observation, my opinion is that the accident was due to Mr. Spindal's own carelessness."

No. 10. Fatal accident to John Wilson (colored), at the Western Coal and Mining Company's mine No. 5, at Yale, Crawford county, October 3, 1899.

An inquest was held at Yale, in Crawford county, on the 5th day of October, 1899, before W. B. Brayman, a justice of the peace of the city of Pittsburg, in said county (acting coroner), on the body of John Wilson, there lying dead, by the jurors whose names are hereto subscribed.

The said jurors on their oaths did say that John Wilson came to his death by accident, of his own carelessness. (Signed) J. H. Shirers, C. E. Anderson, G. W. White, W. W. Weaver, J. C. Adams, Noah Henson, *Jurors*.

The testimony of witnesses, taken at the inquest on the 5th day of October, 1899, before W. B. Brayman, a justice of the peace of the city of Pittsburg, in said county, was as follows:

A. BRUNER, being duly sworn, said as follows:

My name is Alciner Bruner. I am fifty-nine years of age. I have seen John Wilson at the works during his lifetime. He came to his death last Thursday evening, October 3, 1899, at about 8:45 o'clock, somewhere in coal-shaft No. 5, Yale, Crawford county, Kansas, which shaft is operated by the Western Coal and Mining Company. I was night guard at the shaft at the time of the death of Wilson, and was on duty then at the mine.

Q. State what occurred just before and at the time of death.

A. The signals were given to hoist some one out of the shaft, and was answered by the engineer. It was answered by one signal, which was the proper signal to hoist a man. The engineer proceeded to hoist the cage. The cage came up as far as they generally come with men, where you can see the lights of men on the cage. The engineer seeing no lights, he stopped the cage. Engineer went out to the shaft. Finding nobody there on the cage, he called to me to come out. He thought a man was killed or he had killed a man. I don't remember the words. I went out to where he was and we could not find no person.

Q. Did you go down?

A. I did not go down in the shaft. Al. Gunn and two or three other parties went down in the shaft. I was about fifty feet from the shaft when signal was given to hoist. I did not hear any sound or voice after signal was given to hoist.

Q. What first attracted your attention?

A. Mr. Weinhardt, the engineer, first called my attention.

Q. How long had it been before that that cage had been hoisted or lowered?

A. Not within some three hours.

Q. Did you hear any talk indicating there was any quarrel or difficulty about the time this man was killed?

A. No, sir.

Q. Have you any knowledge as to how Mr. Wilson came to his death?

A. No, sir; I have not.

C. A. SMITH, being duly sworn, testified as follows:

My name is C. A. Smith. I reside at Yale, Kan., and have since April 19 last. I am a physician and surgeon. I was called on, on the evening of October 3, to make an examination of the body of John Wilson, whose body was there at the surface of the ground, at shaft No. 5, Yale, Kan.

Q. State the condition.

A. The examination was not completed there. I just seen that he was dead, and waited until he was washed. After he was removed to the house, upon examination, I found the left side of his skull crushed and an irregular wound in the scalp about four inches long, and other minor wounds of the scalp—one just below the long wound and one in the lower part of the occipital region. There were three or four small contusions on the back between the shoulders, integument on his right thumb somewhat lacerated, and the hip bone was broken loose from the sacrum on the right side. Speaking of the wound upon the head, I would say I found the left superior maxillary fractured. The wound upon the head, in my opinion, would have caused instant death.

C. WEINHARDT, being duly sworn, testified as follows:

I am an engineer at shaft No. 5, Yale, Kan., and have been for about a month. I was on duty at the time John Wilson was killed.

Q. State all you know concerning the manner of his death.

A. It must have been half-past eight to a quarter to nine when it occurred. I got the three bells to hoist a man. I answered it by one. Answered from the bottom by one. I hoisted cage about four feet, and thought I heard a small yell. I slowed cage, heard nothing more, brought cage to landing; seeing no lights walked out to cage; found nothing but cap laying at the edge of cage. The cap was bent in where they hang the light. Called the guard to cage; told him that I believed there was a man killed; for him to go and let somebody know about it. I went down with the men. The men being ahead of me I did not reach the bottom of shaft; asked them if there was any one hurt. They answered yes; that there was a man there dead; and I turned around and walked back up to my work; let the men down and hoisted the corpse out.

Q. Did you hear anything to indicate that there was a struggle or quarrel?

A. Nothing.

Q. Did you know of any one having any ill-will against the deceased?

A. None whatever.

Q. Do you know any other fact that will throw any light upon this matter?

A. I do not.

A. B. GUNN, being duly sworn, testified as follows:

My name is A. B. Gunn. I reside at Yale, Kan.; am engaged as motorman at No. 5 shaft, at Yale. I was at home when Mr. Wilson was killed. I live just across the road, east from the shaft. I heard the engineer say, "My God, dad, I believe I have killed a man!" I put on my clothes, went over there and met Mr. Bruner, the guard, between the engine-room and shaft. Engineer came running out of the room, and says: "My God, Al., I believe I have killed a man! What will I do?" I says, "Don't get excited; we will go below and see." I went down the manway and met a Frenchman; can't give his name. We went down the manway, and Charlie followed us down. In about twenty yards of the bottom, I told the Frenchman to keep Charlie back and I would go and see. When I got to the bottom the man was lying in the sump, dead. I says, "Yes, Charlie, you have killed him." Then I hallooed up the shaft to Mr. Bruner to run to the boarding-house and call Mr. Gardner; that there was a man killed, and

to get the doctor. During this time there was another Frenchman came down the manway, and I told them to stay on the bottom and I would take Charlie back to the top. When I got back to the top, Sam Gamble and three other colored men were there, and I asked Sam what we should do; go down and bring him up? and Sam said, "Yes, we will go below." We told the engineer to give us the south cage, and he hoisted it to the landing. We went below and picked the man out of the sump and put him in a car. I hallowed up the shaft, and Mr. Craig answered. I asked for the north cage, which was given us, and we hoisted the man. Sam Gamble, myself and another man went up with the remains. After we got on top, I asked Mr. Craig what we should do with him, and he said a wagon would be there and take him home. I went down with a committee of men that went down yesterday, and there was blood on the west end of the cage.

Q. From the position in which you found the body, the examination you have made of the cage, can you give an opinion as to how the man came to his death?

A. My opinion is that the man belled for the cage; then belled and went away, or belled and reached for a squib box, before he stepped on cage.

Q. Do you know of any quarrel between them, or do you know of anything to indicate that he had come to his death in any other way than being caught in the cage?

A. No, sir; I do not.

Q. In what condition did you find the body, in reference to his head or any injury about the head?

A. Yes, sir, his head was crushed. I found his brains part out on the coal by his head.

Q. How far from the bottom can the cage move, and still be so it can be dumped?

A. I should judge about seven feet—may be eight.

Q. Could it have occurred that this man stepped on cage, was caught, and dumped so that man could have fallen back into sump?

A. Yes, sir.

Q. Do you know any other fact that will throw light upon the manner in which this man, John Wilson, came to his death?

A. No, sir; I do n't.

MALINDA ANDERSON testified as follows:

I reside at Yale, Kan. Age, fifty-three years. Was not acquainted with deceased.

Q. Do you know anything of the manner in which he came to his death?

A. No more than the noise down there.

Q. What noise did you hear?

A. The first noise I heard was like the top of the house being torn off. When I went out I heard some man saying, "Lord, have mercy on me; Lord, save me." Seemed he talked that way five or ten minutes, and then the cage went way down to the bottom, and I did not hear any more talk. When he was talking I saw a light in the top house and one on the slate dump. I cannot tell whose voice this was.

Q. Do you know of Mr. Wilson having any quarrel or ill feeling with any one before his death?

A. No, sir.

Q. There was no screaming or noise to indicate trouble that you heard?

A. No, sir. After the man had been killed, and the cage had gone down, I heard two shots north of the slate dump.

Q. It could not have been possible that Mr. Wilson was killed by those shots?

A. No, sir.

HEMP IRVIN, being duly sworn, testified as follows:

My name is Hemp Irvin; I reside at Yale, Kan.; age, twenty-seven. I have known John Wilson about two months. He was shot-firer at mine No. 5. He was killed about half-past nine o'clock, I suppose. Joe Chambers and myself were in the mine when he was killed. I saw him about three-quarters of an hour before he was killed. I was about 400 feet from him when he was killed. We were going east and he was going west toward the shaft. I do not know of any one else in the mine besides Mr. Wilson, Mr. Chambers and myself at time deceased was killed. At the time we met, Chambers asked him why he left the doors open, and he said he did not; if they were opened, the shots had blown them open. Joe asked him if he was through; he said he was, and was going out. Mr. Wilson did not stop. They did not have any angry words and seemed to be friendly. I was with Mr. Chambers up to the time Mr. Wilson was killed. Mr. Chambers and Mr. Wilson did not meet any from the time just mentioned and the time he was killed. Mr. Chambers and myself were about 400 feet from the shaft where Wilson was killed. At time of accident I heard no hallooing or screaming. I don't know anything more about the cause of his death. I do n't know of his having any quarrel or any one having enmity against him. I am not the regular shot-firer. I don't know if shot-firers came up together or singly. I was with Mr. Chambers all the time after we met Mr. Wilson coming out of the shaft, and Mr. Chambers did not turn back at any time after we met. I don't know who left the squib box at bottom of shaft. I do n't know of them being on a race. He did not have a dinner bucket when we met. I heard Chambers say he would not fire shot any more with Wilson. His reason was that Wilson left the doors open.

FRANCIS KEEGAN, being duly sworn, testified as follows:

I am assistant mine inspector. I have visited mine No. 5 to-day, where Mr. Wilson is reported to have been killed.

Q. You may state the conditions in which you find the shaft and machinery where he was killed?

A. I went into the mine in company with Mr. Gardner, assistant superintendent, and Mr. A. B. Gunn, and upon examining the place where the accident was said to have occurred I could find no visible trace of the accident, but I questioned Mr. Gunn and Mr. Gardner in regard to the matter. They stated that they found Mr. John Wilson with his head on south side of north side sump, and that he was dead when found. I found the machinery in perfect working order, and nothing about it to cause the accident, so far as I could see.

A. B. GUNN, being recalled, says:

Q. Did you hear the testimony of Malinda Anderson?

A. Yes, sir.

Q. Did you hear any outcry about the shaft about that time?

A. I did.

Q. Do you know who it was?

A. It was Charles Weinhardt, the engineer.

Q. Was this before or after Mr. Wilson was killed?

A. Just after the cage was brought up with cap, but no man.

Q. How much of an outcry did Mr. Weinhardt make?

A. He made a loud noise, and was much excited for five or ten minutes. I

did not hear any shooting about the shaft. I did not notice any one about the shaft just previous to accident. I heard Mr. Weinhardt say he thought he heard some one holler when he started to hoist. I saw some men come with lights after the alarm had been given.

No. 11. Fatal accident to B. F. Thomas (col.) at the Southwestern Coal and Improvement Company's mine No. 7, at Mineral, Cherokee county, on October 23, 1899.

In response to telegram from the above-named company, I went to Mineral, arriving there the day after the accident occurred. I went down the mine and into the room where the man was killed. I found that a large, pot-shaped rock had fallen in a break-through leading from the room in which Thomas was working to an old room adjoining it. It seems from what I could learn that the man Thomas had been mining off a shot in this break-through when this rock, which was nine feet long by four feet wide, and two feet thick at the thickest point, fell from the roof and caught him right under it, killing him instantly.

This is the testimony of the man who worked in the room with Thomas when the accident occurred: "This is to certify that on Monday, the 23d of October, 1899, I was working in the same room as B. F. Thomas, in mine No. 7 of the Southwestern Coal and Improvement Company, at Mineral, Kan. The man (B. F. Thomas) was mining off a shot in a break-through into an old room, when, without warning, a large, pot-shaped rock fell from the roof and crushed him, killing him instantly. There were no props under the rock, as it was not known it was dangerous, there being no way of telling by sound the character of it. The rock was eight or nine feet long by four feet wide, and was probably two feet thick in the thickest place. In my opinion the accident was wholly unavoidable, and no one could be held responsible for it. The accident occurred about 1:30 P. M."

No. 12. Fatal accident to J. R. Moore, at the C. A. Beck Coal Company's mine at Pittsburg, Crawford county, on December 2, 1899.

I heard of this accident a few hours after it happened. I then visited the mine and examined the place in which Mr. Moore was working when the accident occurred which caused his death. I found that the room had just been started and driven a short distance. There had been a roll in the roof, close to the face of the coal which Mr. Moore was mining. This roll had fallen and caught him just as he was finishing his work at the coal. The rock was a large, pot-shaped one, six feet long and five feet wide, and about twenty inches thick in the center and tapering out to an edge.

William Cooper, who was working in the room nearest to Mr. Moore, made the following statement: "At about one o'clock P. M. on December 2, 1899, while I was working in my room in the C. A. Beck mine, I heard a noise like that made by a fall of rock. I ran out of my place and into Mr. Moore's room, where I thought the fall had taken place. When I got there I found a large, pot-shaped rock had fallen on Mr. Moore. Being unable to move it, I ran for assistance. Two or three men came, but we could not raise the rock until jacks were brought down the mine. I was well acquainted with Mr. Moore and knew him to be a good, practical miner. From the position in which he was found, he must have been struck by the heaviest part of the rock. He was breathing when I reached him, but he died in three or four minutes afterwards. In my opinion the occurrence was purely accidental, and the blame rests on no one."

This was a sad accident. Mr. Moore had only been working at this mine a

short time. His home was in Missouri, where he had a wife and a small family. The remains were taken to the home of Mr. Cooper and remained there until his wife and children arrived from Missouri, and then taken to their last resting-place. Mr. and Mrs. Cooper deserve credit for the manner in which they treated the bereaved wife and children of the deceased. After her husband was buried, Mrs. Moore took sick and remained at the home of Mr. and Mrs. Cooper for three months, where she was nursed and well cared for during her sickness by Mr. Cooper and wife.

Nos. 13, 14, 15, 16. These accidents are described in detail under the head of "A Mine Explosion," on pages 88 to 113, inclusive.

NON-FATAL ACCIDENTS.

No. 1. January 13. Western Coal and Mining Company's mine No. 7, Crawford county. John Wright, Fleming; shot-firer; employed firing shots; premature explosion of shot.

Burned and bruised by the premature explosion of a shot, which laid him off work a short time. He is a married man, and resides at Fleming.

No. 2. February 3. Southwestern Coal and Improvement Company's mine No. 6, Cherokee county. Joseph Weiner; miner; employed at mining; fall of roof; injury not stated.

No. 3. March 8. The Bell Coal Company's mine, two miles east of Burlingame, Osage county. Thomas Dunn, Fostoria; miner; employed at pushing car; fall of rock; slightly injured.

No. 4. March 28. Bruce Mining and Smelting Company's mine No. 1, Crawford county. John Switzer; day man; employed as dumper. Jumped into the chute when it was full of coal, and the chute broke down.

No. 5. April 6. Central Coal and Coke Company's mine No. 7, Cherokee county. Perry Allison, Scammon; employed as miner; fall of roof; leg broken.

It appears he was passing an empty car, which was going in, and the car jumped the track, knocking out a prop, thus letting a large slab of rock down, and happening to be there, was hurt by it. The most of the injury seems to be that a bone is broken in his foot.

No. 6. April 22. Western Coal and Mining Company's mine No. 7, Crawford county. Joe Scott, Fleming; miner; employed at mining.

No. 7. April 25. J. H. Durkee Coal Company's mine No. 1, Cherokee county. Name not stated; miner; leg broken.

"There was a man got his leg broke in our mine No. 1 the 25th, and Mr. Miller wants you to come and see the room soon as convenient. (Signed) J. H. DURKEE, J. J. GROSS." Whether Mr. McGrath visited the scene of this accident or not I am unable to state, as the above communication relative to the accident is all that was turned over to me.

No. 8. May 6. Central Coal and Coke Company's mine No. 11, Cherokee county. John Stainbrook, Weir City; shot-firer; while ascending mine got knee caught between buntings; leg broken in two places.

No. 9. June 7. Central Coal and Coke Company's mine No. 6, Cherokee county. Joseph Collen, Weir City; shot-firer; employed firing shots; struck with flying coal from shot and slightly injured.

Accident occurred in back entry of first east on south side of mine, room back from face of entry. Three shots in room. He squibbed all three shots and lit them, and one shot missed; he went back to find missed shot, and on coming out of the room ran head first into a pit car that was standing upon room switch. The result was he was knocked down, and before he could get up and out of the room the shot that he had lit went off, and he was struck by the flying coal, but not seriously hurt.

No. 10. July 2. Bruce Mining and Smelting Company's mine No. 1, Crawford county. P. Griglioni, Bruce; miner; employed at mining. Ignited the gas in a drill hole in his room and the flame burned him slightly on hands and face.

No. 11. July 16. Bruce Mining and Smelting Company's mine No. 1, Crawford county. Charles Brown, Mineral; miner. Slightly burned with gas.

No. 12. July 19. Ryder & Playter Coal Company's slope, Crawford county. John Herbst, Pittsburg; miner; employed at mining; fall of roof; bruised considerable but no bones broken.

I visited the scene of the accident, and from the information received from miners who worked close to him it seems that Mr. Herbst was rather careless or he would not have ventured to mine the coal from under the rock, as he could have pulled it down and in that way worked in safety. There was plenty in his place had he desired to use it.

No. 13. July 31. Kansas & Texas Coal Company's mine No. 18, Cherokee county. George Reid (colored), Weir City; shot-firer; employed at shot-firing; premature explosion of shot; burned and bruised.

It seems he had lit one of two shots that were in a room, and it went off before he got any distance away from it, with the above results.

No. 14. September 13. Mount Carmel Coal Company's mine No. 5, Crawford county. Frank Sporn, Chicopee; miner; employed at mining; fall of roof; leg broken.

This was rather an unfortunate accident, as Mr. Sporn had only been working a few days, after an illness of two or three months.

No. 15. October 2. Mount Carmel Coal Company's mine No. 1, Crawford county. Bartel Gartel, Frontenac; miner; employed at mining; fall of rock; ankle broken.

Evidence of witnesses is that it was an accident, and the responsibility for same rests on no one.

No. 16. October 10. Western Coal and Mining Company's mine No. 7, Crawford county. James Green (colored), Fleming; shot-firer; employed at shot-firing; premature explosion of shot; burned and bruised a little.

According to his statement, he had gone into a room off the first south entry to fire the two shots that were in it. He had lighted one of these shots, and was

proceeding to light the other, when the one he had lighted went off. A piece of the flying coal struck him on the head, making a scalp wound, and the fire from the shot burned him a little. I visited this man the night he got hurt. He was badly scared, and, if the accident took place as he claimed it did, he had a very lucky escape in not being killed, as in most cases where a shot goes off on a man when he is so close to it he hardly ever lives to tell the tale.

No. 17. October 13. Swan Coal Company's mine No. 1, Crawford county. William Kennedy, Pittsburg; driver; employed at driving; caught by loaded cars running down grade; leg broken.

A fall had taken place on the roadway and the trip ran into it before Kennedy was aware of it, with the above result.

No. 18. October 31. Southwestern Coal and Improvement Company's mine No. 7, Cherokee county. Jerry Deaton, Mineral; finger cut off; cause of accident not stated.

No. 19. November 2. Arnott Coal Company's mine No. 1, Crawford county. Wilhelm Raub, Pittsburg; miner; walked under cage when it was coming down; badly crushed and bruised.

I learned of this accident exactly one month after it happened, and then only by chance, and not from the company at whose mine it occurred. The following is the account of the accident, as was related to me: "Wilhelm Raub, employed as a miner, was going into the mine to work at about ten minutes to seven in the morning. His light went out at the bottom of the manway. He walked along in the dark, expecting to see a light at the bottom of the main shaft, but as there was no light there to guide him he walked straight into the shaft, and a cage came down on top of him before he knew where he was. There was a man with a mule on the cage at the time, and, although Raub shouted when the cage struck him and crushed him down, no signal was given to the engineer to raise the cage off him until the mule was led off the cage on the bottom. He was laid up three or four weeks by the accident."

No. 20. November 4. Southwestern Coal and Improvement Company's mine No. 7, Cherokee county. John Ceglar, Mineral; shot-firer; employed at shot-firing; premature explosion of shot; severely burned.

It seems that Ceglar had lit a shot in a room, and it had gone off before he had time to get far enough away from it. The flame from the shot went back further than he had expected.

No. 21. November 16. Wear Coal Company's mine No. 5, Crawford county. Abe Napier, residence not stated; miner; employed at mining; fall of slate; hand caught and thumb badly mashed.

No. 22. November 22. Central Coal and Coke Company's mine No. 11, Cherokee county. A. Eagles, residence not stated; miner; employed at mining; fall of slate; leg broken.

It was claimed by his partner, who worked with him, that the accident was due to Eagles's own carelessness in not propping the roof or pulling the slate down.

No. 23. November 24. Kansas & Texas Coal Company's slope, Crawford county. John Willey, Pittsburg; day man; employed as dumper; fell down chute and caught by door of car; seriously injured.

I received no notice of this accident whatever, only that which I obtained in the local press. I clipped the following from the Pittsburg *Tribune* of November 25: "Yesterday afternoon, about three o'clock, John Willey, a miner, employed by the Kansas & Texas Coal Company at its slope near Litchfield, met with very painful injuries. Willey is employed in the top house, where the coal is dumped through the chutes into the railroad flat cars upon the track. Willey is charged with the duty of watching the cars as they are dumped, and if they get caught in any way he helps to empty the car. He also takes the miners' checks from the pit cars as they are dumped. His foot slipped yesterday while he was taking a check from the car and he followed the contents of the car down the chute. When the coal passed through and just as Willey was tobogganing down the chute, the heavy iron door that was thrown forward by the weight of the coal swung shut and caught Willey, pinning him to the bottom of the coal chute. As the door fell upon him an iron bolt pierced his left leg just below the knee, and punched a hole in it about one-half an inch in diameter, and in some unaccountable way there was an excavation made in a circular shape, near the bone, which extended about eight inches in diameter and about the width of a person's finger, and the flesh of the leg next to the chute was crushed to a jelly. Doctors Harvey and Hazelwood were called to attend to his injuries, which they found to be very serious; he will be laid up for many weeks."

I may say right here that I had to depend on this and other papers for a large number of reports of accidents which occurred at the mines during the year, notwithstanding the fact that the law makes it the duty of the coal operators to report to this office all accidents which may occur in or around the mines.

No. 24. November 30. Mount Carmel Coal Company's mine No. 12, Osage county. John Telford, Scranton; miner; employed at mining; fall of slate; left leg broken. Purely accidental.

No. 25. December 11. The Panter Long-wall Mining-machine Company's mine No. 5, Osage county. J. S. Warren, Burlingame; miner; engaged at mining; fall of roof; seriously injured.

This accident was due to fall of slate, while in the act of kicking out coal. In this low vein the miners get down and push the coal out to the roadway with their feet. It seems that Mr. Warren had been kicking or pushing out a chunk of coal, and in so doing he knocked out a prop that was holding up a piece of roof; this roof gave away and caught him. He must have been quite seriously injured, as he had not started to work yet, in the beginning of February, 1900, when I visited there.

No. 26. December 19. The Norton Coal Company's mine No. 3, Cherokee county. — Van Doran, Scammon; was struck by cage; nature of injury not stated.

No. 27. December 23. Mount Carmel Coal Company's mine No. 6, Crawford county. James Darragh, Frontenac; miner; employed at mining; fall of slate; leg broken at ankle.

I visited Mr. Darragh shortly after the accident occurred. He stated to me that he knew that the slate would bear watching, and that he would not allow any of his boys, who were working with him, to do any work under that piece of roof; still he ventured himself to take the coal from under it, with the intention of securing it with props afterwards, but the slate came away and caught him. He has received a bad break and he will be laid off of work considerable time.

No. 28. December 28. Norton Coal Company's mine No. 3, Cherokee county. George Sirratt, Scammon; shot-firer; employed at shot-firing; nature of injury not stated.

No. 29. December 28. Norton Coal Company's mine No. 3, Cherokee county. Proctor McCoy, Scammon; shot-firer; employed at shot-firing; nature of injury not stated.

The list now following contains a number of accidents of which I received no date. Many of them I gleaned from newspapers, and, in nearly every case, too late to reasonably investigate the causes. Some of the returns forwarded to me at the end of the year contained reports of accidents of which I never had the least intimation until I received said reports.

No. 30. Graham Coal Company's mine No. 2, Cherokee county. Ben. S. Martin, Scammon; miner; engaged at mining; fall of slate; nature of injury not stated.

No. 31. Graham Coal Company's mine No. 4, Cherokee county. Ben. Cook, Scammon; miner; engaged at mining; caught by cage; nature of injury not stated.

No. 32. Leavenworth Coal Company's mine, Leavenworth county. Levi Miller, Leavenworth; miner; engaged at mining; fall of slate; arm injured.

No. 33. Leavenworth Coal Company's mine, Leavenworth county. D. Hayworth, Leavenworth; miner; engaged at mining; fall of coal; foot injured.

No. 34. Leavenworth Coal Company's mine, Leavenworth county. P. Klinger, Leavenworth; miner; engaged at mining; fall of slate; foot injured.

No. 35. Leavenworth Coal Company's mine, Leavenworth county. Frank Theel, Leavenworth; miner; engaged at mining; fall of coal; foot and leg injured.

No. 36. Leavenworth Coal Company's mine, Leavenworth county. C. Shrodder, Leavenworth; miner; engaged at mining; fall of slate; arm injured.

No. 37. Leavenworth Coal Company's mine, Leavenworth county. A. Heimbach, Leavenworth; miner; engaged at mining; fall of slate; leg injured.

No. 38. Swan Coal Company's mine No. 1, Crawford county. E. B. Carpenter, Pittsburg; miner; attempted to fire his own shot; badly injured by premature explosion of same.

I found the following account of the accident in a paper a few days after it occurred: "E. B. Carpenter, employed at the W. A. Swan shaft just west of the city, was badly injured Wednesday night in the mine by the premature explosion of a shot. Carpenter is not a shot-firer, but on Wednesday night about nine o'clock, when the shot-firers had left the mine, he went in for the purpose of finishing the putting in of a shot that he had not completed when the whistle blew in the afternoon. He finished the shot and tamped, and, the shot-firers having finished their work for the night in the entry in which his room was located, he concluded to fire his own shot. Yesterday morning about one o'clock his family became alarmed because he did not return from the shaft. They knew he had gone to the pit with the intention of tamping and firing the shot, in order to get out some coal the next day. When they reported to the night man at the shaft that he had gone into the mine and had not since returned home a search was instituted, and he was found in his room lying on his face, about twelve feet from the face of the coal. He was terribly injured. He had several scalp wounds and the side of his face was badly burned. His left arm was broken. The left leg of his trousers was torn to shreds. He was removed to the top and Doctors Harvey and Hazelwood were called to wait upon him. They found his injuries very serious. The wounds upon his head and face are ugly looking wounds. Both bones in the left forearm were broken; from the locations of the injuries he received, the shot must have gone off before he had time to turn around. It caught him on the left side from head to foot. The doctors are hopeful for his recovery. Carpenter has a small family; his home is just west of the Fourth street bridge. He owes his present misfortune to his eagerness for work."

The foregoing may or may not be the exact facts in the case in regard to the injuries inflicted, but the cause of the accident reported in the above is correct, as the returns to this office from this company show that E. B. Carpenter was injured while attempting to fire his own shot. I do not rejoice at any one's misfortune, yet I must say that this man Carpenter got his just deserts, and had I done my full duty in the matter I would have caused his arrest for violation of one of the best mining laws on the statutes of the state.

No. 39. Wear Coal Company's mine No. 5, Crawford county. James Madden, Pittsburg; driver; employed at driving; collar-bone broken, and otherwise injured.

Thrown out of a pit car in which he was riding. The accident was caused by the mule he was driving becoming unmanageable and throwing him out of the pit car.

No. 40. Wear Coal Company's mine No. 5, Crawford county. William Nelson, Pittsburg; driver; employed at driving; left foot wrenched and ankle badly sprained.

The accident was caused by a stubborn mule running away. This threw the cars off the track. Nelson, in his efforts to hold the mule back, wrenched his left foot badly and sprained the ankle.

No. 41. Wear Coal Company's mine No. 7, Crawford county. George C. Burns, Pittsburg; day man; employed with carpenters; shaker started while he was close to it; seriously injured.

The accident was caused by some one who was unaware of Burns's dangerous position starting the fan, which caught Burns and hurled him several feet. In the fall he sustained serious injury.

No. 42. Central Coal and Coke Company's mine No. 6, Cherokee county. William May, residence unknown; driver; engaged at driving; stumbled and fell, and the cars ran on him; leg broken.

No. 43. Arnott Coal Company's mine, Crawford county. Ed. Collins, Pittsburg; miner; engaged at mining; fall of slate; very seriously injured.

I was not notified of this accident at the time it occurred, and I am unable to learn the date. I learned through the press that the injury was a very serious one, and for a time it was thought that Collins would not recover. I have learned since, however, he is improving, but will be laid up for some time to come.

No. 44. Durkee Coal Company's mine No. 1, Cherokee county. Harry McGill, Weir City; miner; engaged at mining; fall of slate; seriously injured.

I did not learn of this accident until a long time after it occurred; neither have I learned the exact date of the accident; but am told that Mr. McGill was badly hurt, and will be laid up for considerable time.

No. 45. Mount Carmel Coal Company's mine No. 1, Crawford county. John Harvey; miner; employed at mining; fall of slate; arm injured.

Office No....	Year ending.	Casualties.		Number of annual report.	Names of different Mine Inspectors.	Total tons produced (short tons).	Total value of coal at the mine.	Average price per ton at mine.....	Average number of days worked.....	Average number of men employed.....	Number of tons produced for each fatal and non-fatal accident.		Total number of casualties..
		Killed ...	Injured ...								Killed.	Injured.	
1	1880 ¹	...	...	1	...	550,000	\$715,000 00	\$1 30	...	...	...	...	...
2	1881 ¹	...	...	2	...	750,000	1,012,300 00	1 35	...	...	...	...	...
3	1882 ¹	...	...	3	...	750,000	975,000 00	1 30	...	...	...	...	...
4	1883 ¹	...	...	...	...	900,000	1,152,000 00	1 28	...	...	...	...	...
5	1884 ¹	3	7	First	E. A. Seannon	1,100,000	1,375,000 00	1 25	...	...	366,666	157,142	10
6	1885 ²	9	20	Second	John R. Bradwood	1,440,057	1,770,270 00	1 23	...	4,175	160,006	72,002	29
7	1886 ²	...	...	...	...	1,350,000	1,620,000 00	1 20	...	...	...	...	...
8	1887 ²	7	22	Third	G. W. Findley	1,570,079	2,198,110 00	1 40	...	...	224,297	71,367	29
9	1888 ² *	...	...	...	...	1,700,000	2,550,000 00	...	...	...	...	...	...
10	1889 ²	12	4	Fourth	J. T. Stewart	2,112,166	3,126,005 00	1 48	...	5,956	176,013	528,041	16
11	1890 ²	8	20	...	...	2,516,054	3,170,870 00	1 30	2 10	4,523	314,506	125,802	28
12	1891 ²	13	35	Fifth	...	2,753,722	3,607,375 00	1 31	2 22	6,201	211,824	78,678	48
13	1892 ³	...	...	...	...	3,007,276	3,954,568 00	1 31½	2 08	6,559	...	...	...
14	1893	15	61	Sixth	A. C. Gallagher	3,611,931	3,960,331 00	1 37½	1 47	9,891	192,128	47,241½	75
15	1894	26	53	Seventh	A. C. Gallagher	3,611,214	3,890,774 00	1 35½	1 64	10,088	138,893	68,136	79
16	1895	10	42	Eighth	Bennett Brown	3,190,843	3,590,141 00	1 12½	1 61	9,021	319,084	75,973	52
17	1896	12	25	Ninth	Bennett Brown	3,161,748	3,227,357 00	1 01½	1 70	8,807	265,979	127,669	37
18	1897	6	30	Tenth	Geo. T. McGrath	3,291,806	3,527,582 42	1 07	1 52½	8,689	549,467%	109,838½	36
19	1898	17	34	Eleventh	Geo. T. McGrath	3,860,405½	4,825,507 37	1 25	1 70¾	8,122	227,094	113,544½	51
20	1899	16	45	Twelfth	Edward Keegan	4,086,895	5,124,248 01	1 25	1 86¾	10,198	256,056	91,042	61

1. Production of coal and average price per ton made from United States geological survey from 1880 to 1881.

2. One report made for two years.

3. No report made. Statistics for that year taken from United States geological survey.

*Explosion at mine No. 2 at Frontenac. No record made of loss of life, but forty-five lives were lost.

The average number of days worked for 1888 is taken from the four largest coal-producing counties in the state. The reason for this low average may be attributed to mines that load nothing but commercial coal, reducing the number of days worked by mines that load railroad coal.

THE SCREEN LAW.

BEFORE entering upon either the merits or defects of this law, it may be of interest to dwell briefly on the conditions that led to its passage. When the question first arose there was a difference of opinion among the miners as to the desirability of such a law. Some of them claimed that, with a fair uniform screen, the practical miner would receive the benefit of his experience in producing a larger percentage of lump or screen coal than his inexperienced coworker. Others claimed that the mine-run system was the best, and considered that a change to that system would be generally beneficial. This agitation brought about a joint meeting of operators and operatives of Crawford and Cherokee counties, at which a mutual agreement was entered into that a uniform screen be used in screening the coal; the dimensions of the screen not to exceed an area of eighty-four superficial feet. The screen might be seven feet wide and twelve feet long, or six feet wide and fourteen feet long, but in no case was the space between the bars in the screen to exceed seven-eighths of an inch. Had this agreement been adhered to by the operators doubtless nothing more would have been heard of the screen law.

For about two years everything went smoothly; then complaints were heard on all sides. Some companies were putting in breakers to smash the coal before it was screened; others were enlarging the dimensions of their screen; others were having a larger space between their bars than had been agreed on. As the miners were only paid for coal that passed over the screen into the lump car, the injustice of those methods must be apparent to all. And even in cases where the companies did not tamper with the screen bars, it can easily be shown how the screens worked an injustice to the miner. Having been engaged as weighman and check weighman for a number of years, I have a good idea of the extent that the screens were a factor in the miners' wages. I weighed coal at a mine which employed over 280 miners at a time when the screen bars had become worn from long use. They had been originally put in according to agreement seven-eighths of an inch apart, and although the relative position of the bars had not been tampered with, the friction of the coal passing over them had worn them until they were fully an inch apart. Under those conditions, the amount of screened coal was fifty-three per cent. of all coal produced. This I can vouch for. I also weighed coal at the same mine when those screen bars had been taken out and replaced by new ones seven-eighths of an inch apart, and the screened

coal then produced amounted to sixty per cent. of the total production and continued so for six months.

To make this plain, we will assume that the mine produced a thousand tons daily, which it nearly did, and the miners, we will say, were paid one dollar per ton for screened coal. This, under the condition that prevailed with the old screen, would net the miners an aggregate of \$530 per day; while, under the improved condition of the screens, the miners would net an aggregate of \$600 per day—a difference of seventy dollars per day, all caused by the difference in the screens.

As soon as in the early '90s the miners became almost unanimous in their demand for an anti-screen law, and finally, after many meetings, conventions, demonstrations, and petitions, needless to detail at this late day, the following bill was passed by the legislature, and approved by the governor March 13, 1893:

AN ACT to regulate the weighing of coal at the mine.

[Session Laws of 1893, ch. 188, p. 271.]

SECTION 1. *Screen.*—It shall be unlawful for any mine owner, lessee or operator of coal-mines in this state, employing miners at bushel or ton rates, or other quantity, to pass the output of coal-mines by said miners over any screen or other device which shall take any part from the value thereof before the same shall have been weighed and duly credited to the employees and accounted for at the legal rate of weights as fixed by the laws of Kansas.

SEC. 2. *Weighman.*—The weighman employed at any mine shall subscribe an oath or affirmation, before a justice of the peace or other officer authorized to administer oaths, to do justice between the employer and employee, and to weigh the output of coal from mines in accordance with the provisions of section 1 of this act. Said oath or affirmation shall be kept conspicuously posted in the weigh office, and any weigher of coal, or person so employed, who shall knowingly violate any of the provisions of this act shall be deemed guilty of a misdemeanor, and, upon conviction, shall be punished by a fine of not less than \$25 nor more than \$100 for each offense, or by imprisonment in the county jail for a period not to exceed thirty days, or by both such fine and imprisonment.

SEC. 3. *Miners can Employ Check Weighman.*—The miners employed by or engaged in working for any mine owner, operator or lessee in this state shall have the privilege, if they so desire, of employing at their own expense a check weighman, who shall have like rights and privileges in the weighing of coal as the regular weighman, and be subject to the same oath and penalties as the regular weighman.

SEC. 4. *Scales.*—Any person or persons having or using any scale or scales for the purpose of weighing the output of coal at mines, so arranged or constructed that fraudulent weighing may be done thereby, or who shall knowingly resort to or employ any means whatever, by reason of which such coal is not correctly weighed and reported in accordance with the provisions of this act, shall be deemed guilty of a misdemeanor, and shall, upon conviction, for each offense be punished by a fine of not less than \$200 nor more than \$500, or by imprisonment in the county jail for a period not to exceed sixty days, or by both such fine and imprisonment.

SEC. 5. *Annulment of this Act Void.*—Any provisions, contract or agreement between mine owners, or operators thereof, and the miners employed there-

in, whereby the provisions of section 1 of this act are waived, modified, or annulled, shall be void and of no effect; and the coal sent to the surface shall be accepted or rejected, and if accepted shall be weighed in accordance with the provisions of this act; and right of action shall not be invalidated by reason of any contract or agreement.

SEC. 6. *Shall Apply to all Workers.*—The provisions of this act shall also apply to the class of workers in mines known as loaders, engaged in mines wherein mining is done by machinery. Whenever the workmen are under contract to load coal by the bushel, ton, or any quantity the settlement of which is had by weight, the output shall be weighed in accordance with the provisions of this act.

This law was to take effect September 1, 1893. The coal companies, through their agents, put forth their most strenuous efforts to prevent the enactment of this law. Having failed in this, and desirous of avoiding trouble on September 1, as that would be about the time for making their contracts for the sale of their coal, they adopted a diplomatic course, posting notices up at their different mines in which they proposed to pay forty-seven cents per ton for unscreened coal in summer, and fifty-three cents per ton in winter; this to take effect May 1, four months prior to the taking effect of the law. This action on the part of the coal operators precipitated the strike of 1893, with all its baneful results.

In the settlement of the strike the companies made contracts with their miners in which the foregoing law was almost entirely ignored. The miners were compelled, by force of circumstances, to accept the terms dictated by the companies. Later, the companies were enjoined for violating this law, and some of their superintendents were arrested. When the cases were tried at the district courts the law was declared unconstitutional, and, therefore, null and void.

In 1897, in the case of *Henry Wilson v. The State of Kansas*, the district court of the sixth judicial district held the law to be constitutional and valid. From this decision the coal operators appealed to the court of appeals, southern department, in which the judgment of the trial court was affirmed, all the judges concurring. Not satisfied, however, the coal companies had the case carried before the supreme court of Kansas, when the judgments of the lower courts were again affirmed. This decision will be found in full elsewhere in this report.

And now it might be thought that the coal companies would comply with the law, and I am happy to state that the majority of them do. But a few of them, emboldened, no doubt, by being able to transgress the law with impunity for the last six years, by baffling it from court to court, are still defying the intent of it in not crediting the gross weight of the coal to the miner. They claim that this part

of the law interferes with their right of contract; it never seems to strike them that they have no right to make unjust contracts.

As soon as I gained a knowledge of the decision of the supreme court I immediately notified the proper representatives of all coal companies operating within this state to comply with this law. The following is one of the notices sent out:

PITTSBURG, November 21, 1899.

Ira Fleming, Esq., General Superintendent Southwestern Coal and Improvement Company, Parsons, Kan.: DEAR SIR—I refer you to chapter 188, Laws of 1893, which regulates the weighing of coal at all the mines in the state of Kansas. This particular law, which has been before the courts of the state for a number of years, has lately been declared constitutional and valid by the supreme court of the state. Such being the case, it becomes my duty as State Mine Inspector to enforce this as well as all other laws relating to mines or mining. I therefore request immediate compliance with the provisions of this act at all the mines in the state of Kansas belonging to the Southwestern Coal and Improvement Company. Yours respectfully,

EDWARD KEEGAN, *State Mine Inspector.*

The above is a fair sample of the notices sent to all coal companies. Replies were received from all of them, a few of which are here submitted:

CENTRAL COAL AND COKE COMPANY,
SCAMMON, KAN., November 22, 1899.

Edward Keegan, Mine Inspector: DEAR SIR—Yours of the 21st, to our general superintendent, relative to weighing, received. We have scales ordered, and are putting them in as fast as possible. Mr. D. Mackie is away from home
Yours truly, GEO. K. MACKIE, *Superintendent.*

KANSAS & TEXAS COAL COMPANY,
PITTSBURG, KAN., November 24, 1899.

Edward Keegan, State Secretary of Mine Industries: DEAR SIR—Your favor of the 21st inst. received, in regard to complying with the screen law. In reply will say that we have no disposition to violate any law. We have taken this matter up with the officers of this company, and have placed an order for the necessary material to enable us to comply with the law. As soon as we receive proper instructions, and this material is received, we will make the necessary changes. Hoping this will be satisfactory to you, and, with best wishes, we are,
Yours respectfully, F. E. DOUBLEDAY,

General Superintendent.

WEIR CITY, KAN., November 29, 1899.

Edward Keegan, Mine Inspector: DEAR SIR—Your letter of 28 inst. received. I shall weigh the coal in compliance with the decision of the court just as soon as I can make necessary arrangements. Yours truly,
W. H. BARRETT, *Lessee K. & T. C. C. Mines.*

WESTERN COAL AND MINING CO.,
PITTSBURG, KAN., December 2, 1899.

Edward Keegan, Secretary State Mine Industries: DEAR SIR—Referring to your favor of recent date in regard to decision of courts in regard to screening coal, beg to advise that we are arranging our mines to comply with the

decision recently handed down. I expect that in less than ten days from now we will have all of our mines fully equipped to comply with the law. I trust you will be kind enough to extend us this time. You no doubt fully realize that it is a very difficult matter to change so many mines on short notice. I would be pleased to have your advice if this will meet your approval. Very respectfully,

A. K. CRAIG, *Superintendent.*

From the tone of the above letters, it will be readily seen that I was led to the belief that, at last, after years of litigation and non-observance, the law would be complied with by all coal companies.

As will be seen from the following correspondence, which explains itself, the belief that all coal companies intended to honestly comply with the law was not sustained by the facts:

JANUARY 3, 1900.

Edward Keegan, State Mine Inspector: DEAR SIR—Since the decision of the supreme court in the screen case the mining companies have desired the injunction proceedings pending against them in some of the courts to be dismissed. If the companies are now obeying the screen law there is no need to further continue the injunction cases. I wish you would advise me what the fact is as to their complying with the law, and also what in your opinion should be done in regard to the further prosecution or dismissal of these injunction cases. An early reply will greatly oblige, Yours very truly,

A. A. GODARD, *Attorney-general.*

JANUARY 6, 1900.

Hon. A. A. Godard, Attorney-general: DEAR SIR—In answer to yours of the 3d inst.: The Western Coal and Mining Company is complying with the screen law, and the companies that have not complied with the law are as follows: Central Coal and Coke Company (only partially), Kansas & Texas Coal Company, Norton Coal Company, Kansas Commercial Coal Company (or Fuller-Swan Coal Company), J. R. Crowe Coal Company No. 2, Wm. Barrett, lessee K. & T. Having given the foregoing companies sufficient time to make the necessary changes at their different mines to enable them to comply with the law, I am notifying them to-day (for the last time) that they must either comply with the law or suspend work; otherwise, I must institute proceedings against them. As to the injunction cases, I do not know what companies are enjoined; therefore I cannot advise. In conclusion, I will state that the Mount Carmel Coal Company, the Wear Coal Company, the Midway Coal Company, and all other coal companies that are employing union miners, are complying with the provisions of the screen law. Yours very respectfully,

EDWARD KEEGAN, *Mine Inspector.*

The following is a sample of the last notice sent out in regard to this matter:

DECEMBER 21.

W. S. Norton, Scammon, Kan.: SIR—I have heard that you are making no effort to comply with the law relating to the weighing of coal before screening, at your mine west of Scammon. Should you not comply with this law ten days from date, I shall be compelled, by virtue of my office of Inspector of Mines, to file proceedings against you. I remain, your obedient servant,

EDWARD KEEGAN, *Mine Inspector.*

JANUARY 6, 1900.

F. E. Doubleday, Superintendent K. & T. Coal Co.: SIR—Sufficient time having elapsed since I notified you to comply with the “anti-screen law” to allow you to make all the necessary arrangements at your different mines for the compliance therewith, you are hereby notified that any mine in Kansas owned or operated by your company which is not already weighing the coal produced and duly crediting it to the miners “before being passed over any screen or other device which shall take any part from the value thereof,” must stop producing coal until such coal is duly weighed and credited to the miners in conformity with the law, or I will be obliged, by virtue of my oath of office as State Mine Inspector, to institute proceedings in court against your company at once.

Very respectfully yours, EDWARD KEEGAN, *Mine Inspector.*

NORTON COAL CO., SCAMMON, KAN., December 22, 1899.

Edward Keegan, Secretary, etc.: DEAR SIR—Yours of the 21st inst. received, noted, etc., and in reply I beg to say your information regarding my making no effort to comply with the mining laws of the state is wholly incorrect. I have my top scale on the ground ready to go in. The fact is we have been unable to get sheet iron of the proper dimensions to complete our screens. We ordered from Kansas City, St. Louis, and Chicago, and failed. Finally we found what we need at Alton, Ill., and are expecting it here in a few days, and as soon as it comes all will be put in order. Thus far we have loaded just four flats that was not weighed on top, but was weighed correctly on the car. The balance of our output has been dumped in the cars from a landing (temporary) just high enough to get the coal in the cars. Now, if you want to shut my mine down, I shall, of course, close it on your say so, for I cannot put scales in and weigh on top until I can hoist and dump on top. Just as soon as our material comes to finish up with, the scale will be put in order and the law complied with. I may say I am a man who believes in law and order. I regard it as the bulwark of freedom. I shall be glad to hear from you, and if you say shut down, then I'll shut down. Yours respectfully,

THE NORTON COAL CO., per W. S. NORTON.

Shortly after this I went round to the different mines, and found that all had got in their top scales, with the exception of Norton's mine at Scammon and one of the Kansas & Texas mines. Both of those mines I was compelled to close down; but as soon as the necessary changes were made to enable them to comply with the law, both mines resumed work. As this matter had taken a good deal of my time and attention, I felt extremely elated when the last of the top scales had been put in at the different mines, and went on attending to my other duties as fast as I could reach them, having no misgivings, as I firmly believed the anti-screen law had at last become an established fact. But soon after this rumors began to reach me that some of the companies were violating the law by paying their miners on a screen-coal basis only. On investigation, I found that such was the case. The situation, at this time, is explained in the following letters:

FEBRUARY 8, 1900.

Edward Keegan, State Mine Inspector: DEAR SIR—I understand that the companies involved in the pending injunctions, brought by Mr. Boyle and

Mr. Widby, were the C. C. & C. Co., W. C. & M. Co., K. & T. Co., S. W. C. & I. Co., and Mt. C. C. Co. From your former correspondence, it appears that the W. C. & M. Co. and the Mt. Carmel Co. are complying with the law. I wish you would let me know definitely whether the other three are complying with the law, as these injunction matters are becoming ancient and ought to be dismissed unless there is some good reason for continuing them longer. If any company violates the law a prosecution would be the thing to begin, instead of injunction. Please give me the facts about this matter as soon as possible, and oblige,

Yours very truly, A. A. GODARD, *Attorney General.*

MARCH 8, 1900.

Hon. A. A. Godard, Attorney General:

DEAR SIR—Pardon my delay in answering your letter of the 8th ult., in relation to the injunction cases pending against a number of the coal companies in the state. In order to be able to answer your letter intelligently, it was necessary to visit some of the companies' mines in question. My duties have been crowding me of late. I have been working on my report and attending the different calls made on me, and have just returned from Burlingame, where I had gone to investigate the cause of a fatal accident. Regarding the injunction cases, I would say that, among the companies mentioned, viz.: the Kansas & Texas Company, Southwestern Coal and Improvement Company, Central Coal and Coke Company, Western Coal and Mining Company, and Mount Carmel Coal Company, the last-named company is the only one, in my opinion, that is complying with the strict letter of the law.

All the other companies are, I believe, trying to evade the law. It is true they have put scales in at all their mines, and are weighing the coal before it is screened. But I hold that they are not crediting it to the miner, as prescribed by law, when they only pay him for his screen coal. They are thus evading the law in its most essential point when they fail to do so. And until I am satisfied that they intend to comply with this law in every particular, I will not be in favor of having the injunctions pending against them dismissed. I cannot understand why those companies are chafing under this injunction if, as they claim, they are complying with the law. They certainly cannot fear being arrested for contempt of court. I imagine it is because they know they are not complying with the law that they are so eager at this time to have the injunctions dismissed.

The miners of this state have worked for the passage of this law for a number of years. And now, since it has become a law, and been declared constitutional by the highest court in the state, any infringement of it should be summarily dealt with. In conclusion, I would say that if this law is allowed to go by default, or anything is done through the machinations of the coal companies or corporations or others which will enable those coal companies or corporations to disregard or trample on it, all concerned in its destruction will be despised by every honest man in the state. Very truly yours,

EDWARD KEEGAN, *Mine Inspector.*

MARCH 12, 1900.

Edward Keegan, State Mine Inspector: DEAR SIR—I have yours of March 8 regarding the matter of complying with the screen law, and as you say the Mount Carmel Coal Company is fully complying therewith, I shall consent to dismiss the injunction as to that company. I will further inform the other side that the other companies mentioned will be expected to fully comply with the law if they desire the injunction dismissed.

Yours very truly,
A. A. GODARD, *Attorney General.*

The foregoing is a truthful presentation of the status of the "anti-screen law" and its enforcement, at the time of going to press with this report, and while it is of the utmost importance that the beneficent provisions of this statute be strictly observed, it must be borne in mind that other important duties are incumbent upon the Inspector, one of which is the preparation of his annual report, now long overdue, the reason for which has already been mentioned. Therefore the subject is dismissed here for the present, with the assurance that nothing on my part will be left undone to secure a full and complete observance of this law.

Following is the decision of the supreme court, in which the law is declared to be constitutional and valid:

THE STATE OF KANSAS V. HENRY WILSON.

Appeal from the Court of Appeals. Affirmed.

1. "An act to regulate the weighing of coal at the mine," being chapter 188 of the Laws of 1893, is constitutional and valid as a proper exercise of the police power. It does not purport to prevent the operators of coal-mines and the miners employed by them from making such agreements as they choose concerning the amount of wages to be paid, or in anywise infringe upon the freedom of contract.

2. Where miners are employed at bushel, ton or other quantity rates, it is a valid requirement of the law that the output of coal mined by them shall not pass over any screen or other device which shall take any part from the value thereof before the same shall have been weighed and duly credited to the employees and accounted for at the legal rate of weights. Information is by this means furnished to the miner by which he may act intelligently and rest his demand for wages upon the calculated results of what he has accomplished in the past. It also affords the operator knowledge, from the use of which wages may be adjusted based upon known facts. Such law is further beneficial in that it supplies the public with statistics showing the total amount of coal produced in the state.

STATEMENT.

The appellant was convicted in the district court for the violation of section 1 of chapter 188 of the Laws of 1893, entitled "An act to regulate the weighing of coal at the mine."

It is charged in the information that the Mount Carmel Coal Company, on or about the 21st day of October, 1897, was a corporation organized and existing under the laws of the state of Kansas, engaged in the business of mining coal from its mines, located in Crawford county, at ton rates, the wages of miners employed being based upon the quality of coal produced by each of them.

The appellant, Henry Wilson, was then and there an agent and superintendent of said corporation, having on its behalf the care and management of its coal-mines and mining business. Said Wilson had a large number of miners in his employ at ton rates. As such agent, he used certain scales for the purpose of weighing the output of coal at said mines, and did, unlawfully and knowingly, employ and make use of certain devices and screens to screen the output of said mines before the same had been weighed. The output of said miners was screened with the knowledge and by virtue of contracts with said miners, and said Wilson then and there failed, refused and did not weigh the output of said coal mined by said miners so employed before the same passed over said screens, but said Wilson unlawfully directed and caused all of the output of coal produced by said miners so employed to be passed over screens before the same had

been weighed, whereby a large part of the value of the output of said coal mined by said miners was taken therefrom before the same had been weighed and duly credited to said miners and accounted for at the legal rate of weights as fixed by the laws of the state of Kansas. Chapter 188 of the Laws of 1893 reads:

"AN ACT to regulate the weighing of coal at the mine.

"SECTION 1. It shall be unlawful for any mine owner, lessee or operator of coal-mines in this state, employing miners at bushel or ton rates, or other quantity, to pass the output of coal mined by said miners over any screen or other device which shall take any part from the value thereof before the same shall have been weighed and duly credited to the employees and accounted for at the legal rate of weights as fixed by the laws of Kansas.

"SEC. 2. The weighman employed at any mine shall subscribe an oath or affirmation, before a justice of the peace or other officer authorized to administer oaths, to do justice between employer and employee, and to weigh the output of coal from mines in accordance with the provisions of section 1 of this act. Said oath or affirmation shall be kept conspicuously posted in the weigh office, and any weigher of coal, or persons so employed, who shall knowingly violate any of the provisions of this act, shall be deemed guilty of a misdemeanor, and upon conviction shall be punished by a fine of not less than \$25 nor more than \$100 for each offense, or by imprisonment in the county jail for a period not to exceed thirty days, or by both such fine and imprisonment.

"SEC. 3. The miners employed or engaged in working for any mine owner, operator or lessee in this state shall have the privilege, if they so desire, of employing, at their own expense, a check weighman, who shall have like rights and privileges in the weighing of coal as the regular weighman, and be subject to the same oath and penalty as the regular weighman.

"SEC. 4. Any person or persons using or having any scale or scales for the purpose of weighing the output of coal at mines so arranged or constructed that fraudulent weighing may be done thereby, or who shall knowingly resort to or employ any means whatever, by reason of which such coal is not correctly weighed and reported in accordance with the provisions of this act, shall be deemed guilty of a misdemeanor, and shall, upon conviction, for each offense, be punished by a fine of not less than \$200 nor more than \$500, or by imprisonment in the county jail for a period not to exceed sixty days, or by both such fine and imprisonment.

"SEC. 5. Any provisions, contract or agreement between mine owners or operators thereof and the miners employed therein, whereby the provisions of section 1 of this act are waived, modified, or annulled, shall be void and of no effect; and the coal sent to the surface shall be accepted or rejected, and if accepted shall be weighed in accordance with the provisions of this act; and right of action shall not be invalidated by reason of any contract or agreement.

"SEC. 6. The provisions of this act shall also apply to the class of workers in mines known as loaders, engaged in mines wherein mining is done by machinery. Whenever the working men are under contract to load coal by the bushel, ton, or any quantity the settlement of which is had by weight, the output shall be weighed in accordance with the provisions of this act.

"SEC. 7. This act shall take effect and be in force from and upon the 1st day of September, 1893, after its publication in the official state paper."

The constitutionality of the act was sustained by the court of appeals and the judgment of the district court affirmed. (*The State v. Wilson*, 7 Kan. App. 428.)

The opinion of the court was delivered by

SMITH, J.: In this opinion I give the views of the majority of the court. On the argument and in the briefs much time and space were consumed in the discussion of the question whether the act under consideration affects the right of contract, and whether the law as it reads has a meaning that the wages paid to coal-miners is to be measured by the gross output of valuable products mined and brought to the surface by the laborers and employees therein.

In our judgment, the law in nowise affects the right of contract, and does not hinder or prevent the mine operator or miner from making such agreements as they choose concerning the amount of compensation to be paid for labor in mining

coal; nor does the act prohibit the employment of miners at day wages, or make void contracts for the payment of wages based on the quantity of screened coal produced. In fact, the law permits complete freedom of action in the respect mentioned. The act does, however, in positive terms, make it unlawful for any mine owner, lessee or operator of coal-mines, employing miners at bushel or ton rates or other quantity, to pass the output of coal mined by said miners over any screen or other device which shall take away any part from the value thereof before the same shall have been weighed and duly credited to the employees at the legal rate of weights fixed by law.

Of the intent of the legislature in enacting the statute it is hardly necessary to inquire. We can see, however, a useful purpose to be accomplished. In the exercise of the police power, the legislature may pass such laws as in its judgment are necessary regulating the measuring or weighing of commodities. In Tiedeman's Limitations of Police Power, page 509, it is said:

"By virtue of the police power, regulations have been imposed on the practice of the law, medicine, and dentistry, as well as upon bakers, millers and wharfingers; and it has been accepted as a proper exercise of the police power to regulate pawn-shops, junk-shops, and loan offices. Inspection laws and those regulating the weighing of articles offered for sale are generally regarded as suitable and valid regulations of police."

The utility of the act (if we have the right to enter upon such an inquiry) can be defended for the reason that the weighing of the gross output from the mine gives information to the miner whose labor has separated it from the general mass of the vein concerning the result of his effort. He is thus advised how much in weight of all grades of this fuel he has extracted from the earth in a day, a month, or a year, enabling him, when armed with this knowledge, to make contracts in the future based upon actual information of the benefits the employer has in the past derived from his labor. Thus informed, he may act intelligently, resting his demand for pay upon the actual value of his own labor as shown by the calculated results of what he has theretofore accomplished. On the other side, the employer may also have this knowledge before his eyes when contracting with the miners for their services, enabling him to make an adjustment of wages based upon known facts.

By this system of weighing, deception as to the amount of coal mined is rendered impossible and fraud prevented. Standing in the light of such knowledge gained from established data, the miner may make a claim of right to wages he knows he can earn, fortifying his demand by reference to what he has done as found recorded in the weighmaster's books.

Further, it is important that the public should have within reach data sufficient to furnish information regarding the amount of coal produced from the mines within the state. A compliance with this law provides means for the compilation of statistics showing the entire output of coal. The dissemination of knowledge concerning the wealth and material resources of a state is a laudable employment, and legislation which tends to accomplish or in anywise assist in such work ought to be upheld and encouraged. For this object alone the act in question is useful, and, being so, we cannot say that the legislature did not have such purpose in view when the same was enacted. We agree with the court of appeals in saying:

"Counsel, throughout their whole argument, assume that the object of this act is to regulate the rate of wages to be paid by mine operators to their employees. We think this assumption is unwarranted, and that, in so far as the arguments of counsel rest upon it, such arguments are irrelevant to the questions which properly arise in the case."

The law is devoted to other purposes than an interference with or a regulation of contracts. It merely prohibits the screening of coal mined at ton or quantity rates before the same is weighed. This is a legitimate exercise of the police power, coming properly within the sphere of legislative action, upon the grounds above stated.

The judgments of the district court and the court of appeals will be affirmed.

OSTER, C. J., concurring.

JOHNSTON, J., concurring specially.

SMITH, J., dissenting.

SPECIALLY CONCURRING OPINION OF JUSTICE JOHNSTON.

JOHNSTON, J.: I think the judgment should be affirmed, and only desire in a few words to add another to the well-stated reasons already given for affirmance. All the authorities unite in sustaining a statute requiring the weighing of a commodity like coal, intended to be sold, and there is no contention here that this is not proper exercise of the police power of the state. The contention is that the statute goes further, and interferes with and infringes upon the right to contract, and if it did I would readily agree with my brother Smith, as well as the court of appeals, that the act would be invalid. I think the act requires but little interpretation; in plain terms it requires the weighing of the output of coal before it is disposed of, provides how it shall be done, and prescribes punishment for any evasion or failure to observe its requirements.

Nothing in the language of the act expressly prohibits or interferes with the freedom of contract, and such a meaning can only be found in far-fetched implications or remote inferences. The legislative intent of an act can be best learned from its words, and, when the meaning is clear, no interpretation is necessary or allowable. While contemporary history and well-known facts may sometimes be considered in determining the legislative purpose of an act, a court is never warranted in departing from the obvious import of unambiguous language, and entering the field of conjecture and speculation in search of a legislative purpose, or in learning it from newspaper statements, or the gossip in the corridors of the state-house when the act was passed.

A still more important consideration is, that if the meaning sought to be imported into this act is given, it would in my judgment destroy its validity. If it be conceded that the statute is ambiguous and open to two interpretations, which should be adopted, the one that upholds or the one that defeats? The presumption, so far as it can obtain, is, that the legislature did not intend to do a vain thing or to enact a statute that was ineffectual and invalid. Every presumption is in favor of the validity of the law, and, if there is room for two constructions, the court must, in deference to the legislature, assume that it did not intend to violate the constitution, and should therefore adopt the one which would uphold the validity of its act.

In Sutherland on Statutory Construction, section 332, it is said, that "Where one construction will make a statute void for conflict with the constitution, and another would render it valid, the latter will be adopted, though the former at first view is otherwise the more natural interpretation of the language." (23 Am. & Eng. Encycl. of L. 349.)

"It is no part of the duty of the court to be astute in order to invalidate a statute; it will, rather, strive to so interpret it as to sustain its validity and give effect to the intention of the legislature." (Ferguson v. Borough of Stamford, 60 Conn. 447.)

The title to the act, to which we may look as an aid to its construction, does not indicate a purpose on the part of the legislature to trench on the freedom of

contract, nor to do anything else than to require the weighing of the output of the coal before it is disposed of; nor do I find in it any express provision or necessary implication compelling us to impute a purpose to the legislature that would overthrow the validity of the act.

DISSENTING OPINION OF JUSTICE SMITH.

SMITH, J.: The construction applied to this law by the majority of the court seems to me to be a perversion of legislative intent, and we need not go beyond the language of its several sections to ascertain that the sole purpose of the enactment was to control and restrict the right of contract. The title, "An act to regulate the weighing of coal at the mine," conceals its true purpose as revealed in the body of the law. The title only partially indicates its object. In *Mugler v. Kansas*, 123 U. S. 623-661, it is said:

"The courts are not bound by mere forms, nor are they to be misled by mere pretenses. They are at liberty—indeed, are under a solemn duty—to look at the substance of things, whenever they enter upon the inquiry whether the legislature has transcended the limits of its authority."

"But the constitution must be interpreted and effect given to it as the paramount law of the land, equally obligatory upon the legislature as upon other departments of the government and individual citizens, according to the spirit and intent of its framers, and as indicated by its terms. An act violating the true intent and meaning of the instrument, although it may not be within the letter, is as much within the purview and effect of a prohibition as if within the strict letter." (District Court Case, 34 Ohio St. 431-440.)

Analyzing the whole act together, we find that the first section prohibits the passing of the output over any screen which shall take any part from the value thereof before the same shall have been weighed and duly accredited to the employees and *accounted for* at the legal rate of weights fixed by the laws of Kansas. This latter clause, employing, as it does, words of well-known import in the commercial world, certainly conveys a meaning at variance with the idea that such crediting to the employees of the gross weight of all the output of value and the "accounting" for the same at the legal rate of weights was intended as a basis for statistics merely, or simply to enlighten the miner for his future guidance concerning the amount of coal mined by him. Section 5 provides:

"Any provisions, contract or agreement between mine owners or operators thereof and the miners employed therein, whereby the provisions of section 1 of this act are waived, modified, or annulled, shall be void and of no effect; and the coal sent to the surface shall be accepted or rejected, and if accepted shall be weighed in accordance to the provisions of this act; and right of action shall not be invalidated by reason of any contract or agreement."

If the design of the act is as stated by my brethren, does it further the objects contended for in the opinion to declare, "and the coal sent to the surface shall be accepted or rejected, and if accepted shall be weighed in accordance with this act, and *right of action shall not be invalidated* by reason of any contract or agreement?" If to give knowledge to the miner of the amount of labor he had expended in digging out a ton of coal was the aim of the statute, why mention the subject of rejecting or accepting any part of the coal, or refer to rights of action? The language, "and right of action shall not be invalidated by reason of any contract or agreement," has reference to a remedy sought in the courts by some one having by contract bound himself to do something which this statute, coming in the way, says he cannot do. The obvious meaning is, that if a miner contracts to take out coal for, say, one dollar per ton, for all screened coal mined by him, he must be paid one dollar per ton for the mine run, that is, the total

weight of the substance extracted from the earth by him having a marketable value, and all contracts for determining the amount of his compensation on any other basis, when he works by ton or quantity rates, are invalidated. It means that, when the miner makes a contract to take out coal at so much per ton for screened coal, the bargain does not bind him; that when he sues his employer for wages, the court must give him judgment, not on the contract, but, finding the weight of all coal he has taken out (both screenings and lump), the gross product is to be credited to him, and compensation given on the basis of its weight.

Section 5 can certainly have no reference to a right of action brought by a miner to recover wages computed on the basis of screened coal, for he had such a right independent of the statute; but it was manifestly the purpose of the act to give the miner a right of action to recover his wages computed on the basis of coal weighed in accordance with the provisions of the law—that is, computed on the basis of coal weighed before screening, and that notwithstanding any contract to the contrary. This seems to me to be the plain, palpable and obvious meaning of the statute.

In determining legislative intent, we have the right to consider the nature of the demands upon the lawmakers which induced legislation for the remedy of an existing evil. As was said by Mr. Justice VALENTINE in *City of Topeka v. Gillett*, 32 Kan. 431-437:

“Courts may take judicial notice of the general history of the country, of what the members of the legislature ought to know when passing the statute which the courts are called upon to construe; and, indeed, of what all well-informed persons ought to know.”

We know that the demand for such legislation was based upon the claim that coal-miners were not paid enough for their labor; that they were at the mercy of the operators, who, by screening the product, robbed them of a portion of the proceeds of their labor which should have been paid for. The object was to right this wrong, and to this end the statute under consideration was passed. To rule otherwise is a wresting of obvious language from its purpose. No clamor rang in the ears of the lawmakers from oppressed and starving miners demanding a law which would furnish them with statistics when they were crying for bread. As we have the right, judicially, to know what the legislature ought to have known, for the purpose of arriving at their intent, can we say that it had the remotest design to make a statute for the purpose indicated in the majority opinion? If information to the general public (including the miner and operator) was the object sought, in order that statistics might be based thereon, the legislature was exceedingly magnanimous, under section 3, in affording to the miners the privilege of employing weighmen at their own expense, if they so desired. The right vouchsafed to them of going down in their own pockets and paying therefrom the expenses of check weighmen to determine the output of the mine for statistical purposes was certainly an exhibition of sincere generosity.

Again, no account is required to be kept of coal taken from the mines, unless the miners are to be paid at ton, bushel or quantity rates. So the collection of information as to the amount produced depends on the continuance of a ton-, bushel- or quantity-rate method of paying wages. If this system of payment is abandoned, there is no preservation of statistics; suggesting the argument that, if the furnishing of exact knowledge to the miner and operator was one of the objects of the law, why does not the law require the weighing of coal mined under all circumstances and under every plan of payment?

If partial knowledge on this subject were a thing so desirable that a whole

legislature was moved to furnish it, why was complete means of knowledge withheld, when ample power existed to obtain it?

As against the remote probability that the act, as interpreted by the majority, will result in any benefit to the miner, is the certainty that the public at large will suffer by its enforcement, if the quantity or ton rate prevails.

The total output of coal in the state for the year 1898 was, in round numbers, 3,860,000 tons. It is estimated that about one-third of the production is slack coal, which goes through the screens. The cost of this compulsory weighing must be added to the price of the fuel which the consumer (the public) is compelled to pay, in order that it may be known with mathematical certainty how many tons the mines of the state have yielded. This tribute is exacted from consumers of Kansas coal to satisfy the contention that the law contemplates some other object than the regulation of wages.

In justifying this legislation as a proper exercise of the police power, I think that power has been unwarrantably extended. Such power must have relation to the health, comfort, safety or necessities of the people. This is asserted in all the books upon the subject. It cannot include matters which are connected merely with the *convenience* of the public. In Black on Constitutional Prohibitions, page 82, it is said:

"There is no possibility, upon any principle of logical deduction from the adjudged cases or the nature of the subject, of stretching the limits of the police power so as to make it include matters which are merely connected with the *convenience* of the public. There are decisions which might seem, at first blush, to lend countenance to such a proposition, but an attentive consideration will show that they either used the term in its broad general sense, or had reference to matters concerning the *safety* of the people, not their convenience."

It is for the courts to define the limits of the police power and confine same within the constitutional bounds. It may be convenient for the miner and the public generally to have the means of knowing how much coal has been mined in the state for the purposes mentioned in the opinion, but the necessity of such knowledge is not apparent. It would be interesting to know with accuracy the total yield of corn in Kansas during the present year. But the enactment of a law requiring the farmer to measure every bushel of his corn as soon as it is ready for market could hardly be justified, even though it might assist the persons who gathered it in determining the amount of profit the farmers would derive from their labor. General laws and city ordinances relating to the weighing of the commodities before sale have been upheld as coming within the police power for the reason that the purchasers are protected.

In the case of *Millet v. People*, 7 N. E. Rep. 631-636, the supreme court of Illinois passed upon the validity of an act quite similar to this, relating to the weighing of coal at the mines. In holding the law unconstitutional, as infringing upon the right of contract, the court answered the argument that the act might be defended on the ground that it required the keeping of a public record for the information of the public. SCHOFIELD, J., says:

"We recognize fully the right of the general assembly, subject to the paramount authority of congress, to prescribe weights and measures, and to enforce their use in proper cases, but we do not think that the general assembly has power to deny to persons in one kind of business the privilege to contract for labor and to sell their products without regard to weight, while at the same time allowing to persons in all other kinds of business this privilege, there being nothing in the business itself to distinguish it in this respect from any other kind of business. And we deny that the burden can be imposed on any corporation or individual, not acting under a license, or by virtue of a franchise, of buying property and hiring labor merely to furnish public statistics, unless upon due compensation to be made therefor."

It would be a mere affectation of industry to collate here the great number of decisions which denounce legislation of this kind infringing upon the right to contract by persons *sui juris*, like the miners employed by the appellant, who, according to the agreed facts, are of full age, sound mind, and of full and legal capacity to contract and be contracted with. The court of appeals had no doubt of its invalidity if its provisions related to the regulation of wages. The court said:

“As we have already stated, we should hold this law to be invalid if it in terms express such purpose (the regulation of wages), but neither the title of the act, nor the act itself, directly or indirectly purports to relate to the matter of wages.”

In my judgment the decision of the framers has been misconstrued and perverted. A law thought by them to be endowed with strength and virility, aiming at the correction of abuses in the field of labor, has been disfigured by its interpreters—its true purpose denied. Strained and imaginary reasons are put forward as excuses for its existence, and explanations of its utility which are highly fanciful and speculative. By a process of refined construction its original identity has been effectively destroyed, until recognition by its creators is now impossible.

THE ESCAPEMENT-SHAFT LAW.

Being somewhat in doubt as to the true sense of this law, and wishing to be fair in presenting the practicable application of it to the different counties, I wrote the following letter to the attorney-general:

TOPEKA, KAN., October 25, 1899.

Hon. A. A. Godard, Attorney General: SIR—Herewith is the law relating to escapement shafts in the state of Kansas:

CHAPTER 165.—LAWS OF 1899.

RELATING TO SHAFTS IN COAL-MINES.

AN ACT providing for the sinking of escape shafts at coal-mines in the state of Kansas, and providing that the same be connected with the main or hoisting shaft, and providing a penalty for the violation of this act.

Be it enacted by the Legislature of the State of Kansas:

SECTION 1. In all coal-mines that are now or have been in operation or which may hereafter be put in operation in the state of Kansas prior to the 1st day of March, 1899, and which are worked by or through a shaft, slope, or drift, and in which more than ten miners are employed in each twenty-four hours, if there is not already an escapement shaft to each and every said mine, or communication between each and every mine and some other contiguous mine, then there shall be an escape shaft or some other communication such as shall be approved by the Secretary of Mine Industries or Mine Inspector, making at least two distinct means of ingress or egress for all persons employed or permitted to work in such mine. Such escape shaft or other communication with a contiguous mine aforesaid shall be constructed in connection with every vein or stratum of coal worked in any mine; and the time to be allowed for such construction shall be four months when such mine is under 100 feet in depth, and eight months when said mine is over 100 and not over 200 feet in depth, and one year for all mines over 200 and not over 300 feet in depth, two years for all mines over 300 feet and not over 400 feet in depth, three years for all mines over 400 feet and not over 500 feet in depth, and five years for all mines over 500 feet in depth.

SEC. 2. Said escape shaft shall be constructed at least 300 feet from main or hoisting shaft or any buildings connected therewith, and said escape shaft shall be provided with stairways securely fastened so as to bear the combined weight of not less than fifteen men ascending or descending the same. Said stairways shall be so constructed as not to exceed forty-five degrees of elevation by each section of said stairway, and each section shall have substantial guard-rails securely fastened, and the stairways shall be separately partitioned from the parts of such shafts used as upcasts or downcasts, and the traveling ways between the bottom of main shaft and the escape shaft or stairway shall be at least five feet in height. Said traveling ways shall be kept clear of all obstructions, and stagnant or standing water shall not be allowed to accumulate in any traveling way between the upcast and downcast shafts.

SEC. 3. Whenever the owner, agent or operator of any mine shall neglect, fail or refuse to comply with sections 1 and 2 of this act, it shall be the duty of the Secretary of Mine Industries or State Mine Inspector, when apprised of this fact, to enter complaint with the county attorney of the county in which such mine or mines are located, and such county attorney shall immediately prosecute said owner, agent or operator of said mine the same as in other cases; and in all prosecutions under this act, it shall be conclusive evidence against the party charged if it shall be conclusively proved that said escape shaft was not constructed according to the provisions of this act and within the time heretofore stated. Any owner, operator, agent or lessee who fails to comply with sections 1 and 2 of this act shall be deemed guilty of a misdemeanor, and shall on conviction be fined in a sum not less than \$500 nor more than \$2000, or by imprisonment not less than six months nor more than two years, or by both such fine and imprisonment. —

SEC. 4. All acts or parts of acts in conflict with this act are hereby repealed.

SEC. 5. This act shall take effect and be in force from and after its publication in the official state paper.

Approved March 4, 1899. Published March 29, 1899.

In regard to the foregoing, I am at a loss to know how to proceed. I consider the law a good one, and think it should be enforced in the following counties: Crawford, Cherokee, Linn, and Leavenworth. As there is a large amount of machinery used in those counties at each shaft, besides having shops, towers, and other wooden structures built all around the main hoisting shaft. The danger is also greatly augmented in the first three counties named by powder being used in great quantities for blasting the coal and rock, and, as this is unavoidable, it is necessary to have the escapement shaft at a safe distance from the hoisting shaft.

In all other counties that are worked on the long-wall system, I believe the above law is impracticable and unnecessary as a means of safety to the miners of those counties, for the reason that no coal is blasted, no explosive gas is generated, only horse power is used for hoisting purposes, and the danger from fire is very remote. I believe that a good escapement shaft 100 feet from the main opening would be sufficient to insure the safety of the miners, considering the system on which these mines are worked.

Now, what I wish to know is:

1. Does this law apply to all shafts now in operation in the state?

2. Does the law allow the Mine Inspector discretionary power in the matter, and to what extent?

Very respectfully,
EDWARD KEEGAN,
State Secretary of Mine Industries.

DECEMBER 1, 1899.

Edward Keegan, State Secretary State Mine Industries: DEAR SIR—I am in receipt of your letter making inquiry with regard to the provisions of chapter 165, Laws of 1899, in which you inquire regarding your duties in the enforcement of this law, and more particularly with regard to the mines to which the law is applicable. You will observe that the first sentence of section 1 of this act reads as follows:

"SECTION 1. In all coal-mines that are now or have been in operation or which may hereafter be put in operation in the state of Kansas prior to the 1st day of March, 1899, and which are worked by or through a shaft, slope, or drift, and in which more than ten miners are employed in each twenty-four hours, if there is not already an escapement shaft to each and every said mine, or communication between each and every mine and some other contiguous mine, then there shall be an escape shaft or some other communication such as shall be approved by the Secretary of Mine Industries or Mine Inspector, making at least two distinct means of ingress or egress for all persons employed or permitted to work in such mine."

The remainder of this section provides for such escape shafts or other communication with every vein or stratum of coal worked in any mine, and time is given within which such additional shafts may be constructed. Section 2 provides that the escape shaft shall be constructed at least 300 feet from the main or hoisting shaft, or any building connected therewith, and also provides for the manner of construction and the manner in which stairways shall be erected therein. Section 3 provides the penalties for violations of the act.

In my opinion, that part of section 1 above quoted refers only to coal-mines then in operation, or which might be put in operation before March 1, 1899, in possessing escapement shafts, and the act does not refer to mines of the nature and size therein mentioned in which escapement shafts had already been sunk.

In answer to your second question, namely, as to whether or not you possess any discretion with regard to the enforcement of this act, I desire to say that the statute does not give you any discretion; but if, in the performance of your official duties, you find mines of the kind and nature mentioned in the statute, in which it is impossible to sink such an escapement shaft as is provided by the statute, and the compliance with the law is a physical impossibility, you are in my judgment justified in refusing to invoke the penalties of the law for the non-compliance therewith.

Yours very truly,

A. A. GODARD, *Attorney General*.

On receipt of the foregoing I issued circular copies of the law to all operators, and insisted on a strict compliance with the same.

MINE MAPS, BOILER INSPECTIONS, Etc.

The following companies filed maps of the underground workings of their mines :

- The Mount Carmel Coal Company, all of its mines.
- The Western Coal and Mining Company, all of its mines.
- The Wear Coal Company, all of its mines.
- The Kansas & Texas Coal Company, all of its mines.
- The Arnott & Co. mine.

Several other companies are having a survey taken, and have promised to send in their maps as soon as the extensions are made.

The following companies have forwarded their certificates of boiler inspections :

- Mount Carmel Coal Company, all boilers.
- The Wear Coal Company, all boilers.
- The Western Coal and Mining Company, all boilers.
- The Pittsburg & Midway Coal Company, all boilers.
- The Kansas Commercial Coal Company, all boilers.
- The Central Coal and Coke Company, all boilers.
- The W. H. Miller Coal Company, all boilers.
- The Southwestern Coal and Improvement Company, all boilers.
- The Eastern Coal and Coke Company, all boilers.
- The Leavenworth Coal Company, all boilers.
- The Home-Riverside Coal and Mining Company, all boilers.
- The J. H. Durkee Coal Company, all boilers.
- The G. A. R. Coal Company, all boilers.
- The Kansas & Texas Coal Company, all boilers.
- The Weir Junction Coal Company, all boilers.
- The J. C. Graham Coal Company, all boilers.
- The Norton Coal Company, all boilers.

Nearly all of the coal companies have forwarded their airway examination regularly, but none of them stated the volume of air in circulation. In many instances where it was claimed that the airways were in good condition, I have gone to the mine and found the very opposite the case.

APPENDIX.

APPENDIX.

PROCEEDINGS OF SECOND ANNUAL CONVENTION OF THE STATE ASSOCIATION OF MINERS, HELD AT TOPEKA, KAN., FEBRUARY 5 AND 6, 1900.

Pursuant to a call issued by Edward Keegan, state secretary of mine industries, the second annual convention of the State Association of Miners assembled in the labor commissioner's office in the state capitol, Topeka, on February 5, 1900. In the absence of Pres. Joseph Forsyth, Vice-pres. John T. Pratt, after making a brief address of welcome, declared the meeting open and ready to transact business.

The president ordered the reading of the minutes of the first annual convention.

On motion of Delegate Little, the reading was dispensed with, as it was a rather lengthy document.

A motion that the president appoint a committee of three on credentials was carried.

The president appointed the following committee: Dan Williamson, Leavenworth; Archie Nesbit, Midway; Francis Fern, Scammon.

Hon. G. C. Clemens was then introduced to the convention. His address was listened to with marked attention by the delegates.

After Mr. Clemens had concluded his address, Delegate Dan O'Donnell, of Frontenac, was called upon to make a few remarks. Mr. O'Donnell stated that he had nothing particular to say at that time, further than to point out the fact that working men were the wealth producers of the earth, and had the least share of the product of their labor. He further stated that he would be likely to have a good deal to say before the convention adjourned.

A recess of thirty minutes was then taken, pending the report of the committee on credentials.

On reconvening, the committee on credentials reported as follows:

MR. PRESIDENT: We, your committee on credentials, by majority vote, favor the admission of all delegates who have presented credentials here to-day.

DAN WILLIAMSON.
ARCHIE NESBIT.

Delegate Fern offered the following minority report:

MR. PRESIDENT: I recommend that we unseat all but union miners.

FRANCIS FERN.

When the foregoing had been read, Delegate Fern arose and

claimed that the minority report did not read as he intended it should and that the secretary must have misunderstood him. He said his intention was to exclude only those who had not returned their credentials to the secretary five days before the convention was held, as that was his understanding of the law. The majority and minority report of the committee was thoroughly discussed. The secretary, being questioned on the matter, defined his position by reading the following letters, which explain themselves:

MIDWAY, KAN., January 22, 1900.

Edward Keegan: DEAR SIR—Please send credentials for delegate to represent No. 4 mine at the convention to be held at Topeka on February 5.

THOMAS DICKINSON, *Delegate.*

ARCHIE NESBIT, *President.*

JAMES MCGEEHAN, *Secretary.*

PITTSBURG, KAN., January 29, 1900.

Jas. McGeehan, Esq., Midway, Kan.: DEAR SIR—I enclose herewith credentials as per your request. Should any trouble arise, or, in other words, should you send a delegate with these credentials and he failed to get a seat in the convention, I am not to blame, and I will not be responsible. My only duty in this matter is to issue credentials when called on to do so. I have every reason to believe that it will be doubtful whether a delegate elected as the man Dickinson was can have a voice in the convention of the State Society of Miners. I give the following reasons: (1) The law in regard to the matter states "that whenever five or more miners shall now be organized or shall hereafter organize as a miners' association, and shall choose a delegate to the State Association of Miners, such delegate shall, being duly certified by the presiding officers of such association, be admitted to and become a member of the State Association of Miners until his successor shall have been chosen and admitted." It is clear from the above, which is part of section 1 of the act creating a State Association of Miners, that any five or *more miners*, who are organized in any miners' union or association, are entitled, according to law, to act as a delegate to the State Association of Miners' convention. You will notice, however, that it plainly states that any *five or more* organized men can select a delegate. Midway Local Union No. 533, we will say, has 250 members. They are therefore entitled to a delegate, from the fact that they are an organized body of miners of five or more members. It will also be seen that they have all the law allows when they have one delegate to represent them. And now here is the point I wish to state: Midway Local Union No. 533, U. M. W. of A., has selected a delegate to represent said union. This delegate represents every member in that union, as they had a voice and vote in electing him. Now, can any one of those 250 members *who are already legally represented* take part in the electing of another delegate from some other miners' association to represent them when they are already legally represented by the delegate they have helped to elect from No. 533, U. M. W. of A.? This is a question I wish you to consider. I am not a lawyer, or the son of one. But I will say that I cannot guarantee that Mr. Dickinson will get a seat and vote in the coming convention, and will not be responsible if he does not, as I am doing my whole duty in the matter when I send credentials when called upon. This I cheerfully do, although I would much rather have kept this within union lines, as I believe it would have been a nice thing to be able to say that the United Mine Workers elected the Mine Inspector of their choice in Kansas,

let that be who it may; and I further believe that if such election was once established on a union basis that it would always remain so. However, I consider I have done my full duty in the matter, and now leave everything in your own hands. With kindest regards, I am,

Yours very respectfully, EDWARD KEEGAN, *Secretary.*

P. S.—In case any other parties decide that they want credentials they can be obtained upon application.—E. K.

Please read this at the meeting of the local union of the U. M. W. of A.

Other letters were read in reference to the matter, after which a motion to accept the majority report of the committee on credentials was carried, twenty voting for the motion and eight against.

The following are the names of the delegates entitled to a seat:

Dan Ryan, local No. 569, U. M. W. of A., Dist. 14, Mineral.
 Thos. Barrett, local No. 528, U. M. W. of A., Dist. 14, Cold Valley.
 A. C. Gallagher, local No. 501, U. M. W. of A., Dist. 14, Chicopee.
 Enrico Colletti, local No. 127, U. M. W. of A., Dist. 14, Chicopee.
 John Edmiston, local No. 469, U. M. W. of A., Dist. 14, Fleming.
 Francis Fern, local No. 597, U. M. W. of A., Dist. 14, Scammon.
 Harris Cordray, local No. 445, U. M. W. of A., Dist. 14, Nelson.
 Dan O'Donnell, local No. 444, U. M. W. of A., Dist. 14, Frontenac.
 William Herrel, local No. 219, U. M. W. of A., Dist. 14, Pittsburg.
 James Orr, local No. 210, U. M. W. of A., Dist. 14, Weir.
 William Davis, local No. 463, U. M. W. of A., Dist. 14, Mulberry.
 Archie Nesbit, local No. 533, U. M. W. of A., Dist. 14, Midway.
 Mordecai Jones, local No. 85, U. M. W. of A., Dist. 14, Stippville.
 Chas. Stonequist, local No. 1009, U. M. W. of A., Dist. 14, Osage City.
 Dewey Reece, local No. 1074, U. M. W. of A., Dist. 14, Burlingame.
 Chas. Little, local No. 544 U. M. W. of A., Dist. 14, Scranton.
 James Graham, local No. 679, U. M. W. of A., Dist. 14, Leavenworth.
 Dan Williamson, Enterprise Association, Leavenworth.
 Thos. Monahan, Miners' Local Union, Leavenworth.
 John T. Pratt, Miners' Association, South Leavenworth.
 A. W. Jenkins, Drivers' Association, mine No. 5, Pittsburg.
 Lewis Lewis, Protective Association, mine No. 5, Pittsburg.
 John Dooley, Independent Society of Miners, Leavenworth.
 Frank Sawaschki, Social Miners' Club, Leavenworth.
 Bernard Moore, Drivers' Association, Chicopee.
 Thos. Dickinson, Miners' Association, mine No. 4, Midway.
 Hugh Clegg, Miners' Association, mine No. 5, Midway.
 David Casselman, Miners' Association, mine No. 6, Midway.

DAN WILLIAMSON,
 ARCHIE NESBIT,
 FRANCIS FERN,

Committee on Credentials.

On motion, a committee of three on order of business was appointed by the president, as follows: Dan Ryan, Mineral; Archie Nesbit, Midway; John Edmiston, Fleming.

Motion that a committee of six on resolutions be elected. Carried. The following delegates were nominated, and on motion were elected by acclamation: Francis Fern, Scammon; Dan O'Donnell, Frontenac;

James Orr, Weir City; A. C. Gallagher, Chicopee; Thos. Dickinson, Midway; and Mordecai Jones, Stippville.

Motion that we adjourn until eight o'clock the following morning. Carried.

TUESDAY MORNING SESSION.

The convention was called to order at 8:30 A. M. by the president. The committee on order of business tendered their report, as follows:

1. Call to order by president.
2. Reading of minutes.
3. Presentation of credentials.
4. Report of committee on credentials.
5. Roll-call of delegates.
6. Appointment of committees.
7. Reports of officers and committees.
8. Communications and bills.
9. General remarks for the good of the order.
10. Unfinished business.
11. New business.
12. Nominations and election of officers, as follows: First, secretary and *ex officio* Mine Inspector; second, president; third, vice-president.
13. Miscellaneous business.
14. The election of legislative committee.
15. Roll-call of delegates, with the associations they represent (as amended).
16. Adjournment.

Motion that the report of committee on order of business be accepted as read.

Amendment to motion that in clause 15 be inserted the words, "roll-call of delegates, with the associations which they represent." The motion as amended was carried.

Motion that the report of the committee be accepted as amended. Carried.

At this time it was learned that the Hon. W. H. Ryan was in town, staying at the National hotel. On motion, a committee was appointed to wait on Mr. Ryan and invite him to come and address the convention. Committee: Dewey Reece, Burlingame, and Lewis Lewis, Pittsburg.

As soon as this committee had gone on their mission a discussion arose as to the right of Mr. Getzinzer, of the Labor Exchange of Osage City, to act as a delegate to the State Association of Miners, he having no credentials of any kind to that body. After considerable discussion, a motion by Delegate Casselman that "he be allowed a seat and voice in this convention, but no vote," was lost.

The committee that went to wait on Mr. Ryan now returned, accompanied by the senator. He was then introduced by the president. In his opening remarks the senator reviewed the advantages which the law creating this Association of Miners, and also the law creating

the Society of Labor and Industry, gave to the miners and laboring people of the state of Kansas. In concluding his remarks, the senator expressed the hope that the day was not far distant when the legislature would make an appropriation to pay the expenses of the delegates to the annual meetings of this association, and anything tending to that end would receive his full support. His address was received with marked approbation and applause by the delegates.

On motion, a committee of two was appointed to wait on committee on resolutions to find out if they were ready to report.

A motion prevailed that Mr. Blaine, as chairman of the legislative committee, be requested to report to this body.

A motion that the report of the legislative committee be printed with the minutes of this meeting was carried.

A recess was then taken until one P. M.

TUESDAY AFTERNOON SESSION.

The convention reassembled at the hour named.

Motion by Delegate A. W. Jenkins that we suspend the rules and pass to the election of a legislative committeeman. Carried.

Francis Fern and James Orr were placed in nomination. Mr. Orr withdrew his name in favor of Mr. Fern.

A motion was then made to suspend the rules and elect Mr. Fern by acclamation. Mr. Fern objected to this line of procedure, but he was speedily overruled by the convention. Notwithstanding his objection, the question being called for, the motion was put, and Delegate Francis Fern was declared the unanimous choice of the convention.

On motion, a committee was appointed to inform the State Society of Labor and Industry of the action taken.

The committee on resolutions then submitted their report, as follows:

Resolution No. 1:

WHEREAS, One of the principal means by which the employees of most corporations, particularly coal companies, are fleeced and imposed upon is the existence of truck stores owned and run by such corporations and companies; and

WHEREAS, The legal issuance of scrip, coupons and other mediums of exchange other than United States currency should be discountenanced: therefore, be it

Resolved, That we recommend and urge upon all wage-earners to take conservative action against such a system, and discontinue the receiving of their wages in any other kind than lawful money of the United States.

On motion, resolution No. 1 was adopted as read.

Resolution No. 2:

Resolved, That we, the State Society of Labor and Industry and the State Association of Miners, urge that each delegate, in making his report to his local,

recommend that each local secretary of the various labor industries shall write a letter to his representative in congress asking him to use his best endeavors in securing an early investigation of the Idaho troubles, and to make all possible effort in bringing about a speedy adjustment of the same, and secure the much-vaunted American freedom to its citizens.

On motion, resolution No. 2 was referred to the State Society of Labor and Industry.

Resolution No. 3:

WHEREAS, The sole means of public production and distribution are privately owned by individuals, corporations, trusts, or syndicates, that our struggle for the emancipation of labor is not only difficult but unattainable: therefore, be it

Resolved, That we exert ourselves by all legitimate means to bring about the collective and cooperative ownership of all public utilities.

On motion, this resolution was adopted as read, and especially recommended to the State Society of Labor and Industry.

Resolution No. 4:

Resolved, That we, the representatives of the coal-miners of Kansas, assembled in convention according to law, demand that our future Inspector of Mines enforce all laws pertaining to mines and mining.

Resolution No. 5:

Resolved, That we, the State Association of Miners and State Society of Labor and Industry, believe the time is ripe for compulsory arbitration, and that a bill be drawn up and modeled after the New Zealand system for the state of Kansas, and it be referred to the legislative committee by the State Society of Labor and Industry.

On motion, the resolution was adopted as read, and referred to the State Society of Labor and Industry for their approval.

Resolution No. 6:

WHEREAS, The law creating the Miners' Association reads so as to allow the perpetration of fraud in the manner of electing delegates, inasmuch as any organization could be formed at a moment's notice with no other object in view than that of controlling the convention; and

WHEREAS, We believe that only duly and properly organized bodies of coal-miners should be entitled to representation in the State Association of Coal-miners: therefore, be it

Resolved, By the State Association of Coal-miners and State Society of Labor and Industry assembled, that section 1 of the law should be changed so as to read: "Any organization must be organized at least ninety days prior to the convention, and shall be a duly chartered organization"; and

Resolved, That a basis of representation be established; and

Resolved, That the basis of representation be one delegate for each local organization, and an additional delegate for each 100 members or major fraction thereof in the local organization.

On motion, this resolution was adopted, and referred to the legislative committee.

Resolution No. 7:

WHEREAS, The Mine Inspector of the state of Kansas and one assistant are unable to enforce the law for the preservation of life and limb and sanitary requirements of those who work in the mines: therefore,

Resolved, That the state make due allowance in appropriating sufficient money to pay three assistants.

On motion, this resolution was adopted as read.

Resolution No. 8:

Resolved, That the assessment for the legislative committee and other expenses for the coming season be levied on the basis of representation to this convention.

Adopted as read.

Motion that the resolutions as a whole be referred to the State Society of Labor and Industry for their indorsement and approval. Motion carried.

Other resolutions were submitted for the consideration of the convention, which, on motion, were tabled, with instructions not to print.

On motion, a recess was taken until 7:30 P. M., to enable the delegates to attend the Society of Labor and Industry and take part in the election of the officers of that body.

TUESDAY EVENING SESSION.

The convention reassembled at 7:30 P. M., and after being called to order by the president the roll was again called, and responded to by twenty-eight delegates.

The convention then went into executive session, and proceeded to the election of officers in the following order: Secretary, president, vice-president.

Motion that we nominate by informal ballot. Carried.

Motion that the chair appoint three tellers. Amended that the convention elect the tellers. Amendment carried.

Dewey Reece, Dan O'Donnell and Mordecai Jones were chosen tellers.

The informal ballot for state secretary resulted as follows: Edward Keegan, 17; David Casselman, 8; W. D. Robinson, 3.

Motion by Delegate A. C. Gallagher that the informal ballot be made formal. The secretary announced that the informal ballot could not be made formal except by the unanimous consent of all the delegates.

The first formal ballot was then taken, and resulted as follows: Edward Keegan, 18; David Casselman, 7; W. D. Robinson, 3.

Motion by Delegate Nesbit, seconded by Delegate Jenkins, that the rules be suspended, and the secretary be instructed to cast the unanimous vote of the convention for Edward Keegan for state secretary.

The next order of business was election of a president. An informal ballot was taken, resulting as follows: James Graham, 5;

James Orr, 3; John T. Pratt, 11; Dan O'Donnell, 2; A. W. Jenkins, 2; Dan Williamson, 1; A. C. Gallagher, 3; John Edmiston, 1.

The first formal ballot was then taken, and resulted as follows: James Graham, 4; James Orr, 1; John T. Pratt, 16; Dan O'Donnell, 1; A. W. Jenkins, 3; A. C. Gallagher, 3.

John T. Pratt having received a majority of all votes cast, on motion, the secretary was instructed to cast the entire vote for John T. Pratt for president. Carried.

Selection of a vice-president was next in order. Two or three candidates were named but withdrew in favor of James Orr.

On motion, the rules were suspended and James Orr was elected to the office of vice-president, by acclamation.

Under the head of miscellaneous business, a motion prevailed that the delegates attend the morning session of the State Society of Labor and Industry to support Francis Fern, of the State Association of Miners, and Delegate W. O. Van Pelt, of the State Society of Labor and Industry, as members of the legislative committee.

On motion, the convention then adjourned, to meet the first Monday in February, 1901, unless sooner called in special session in accordance with the provisions of the law.

EDWARD KEEGAN, *Secretary*.

CHAPTER 33.—Laws of 1898.

MINERS' ASSOCIATION, HOW ORGANIZED.

AN ACT creating a State Association of Miners, with power to elect a secretary of mining industries, who shall succeed to the powers and duties of the state mine inspector.

Be it enacted by the Legislature of the State of Kansas:

SECTION 1. Whenever five or more miners actually engaged in mining coal, zinc or other minerals for wages shall now be organized or shall hereafter organize as a miners' association in any county, city or mining camp in the state, and shall choose a delegate to the State Association of Miners, such delegate shall, being duly certified by the presiding officer of such association, be admitted to and become a member of the State Association of Miners until the first Monday in February next following, and until his successor shall have been chosen and admitted; provided, that at any time any such association may recall its delegate by choosing and certifying his successor.

SEC. 2. On the first Monday in February, 1899, and every year thereafter, the delegates elected to said State Association of Miners shall assemble at the state capitol, at an hour and place to be fixed by the secretary in his annual call therefor, to be mailed to each association at least ten days before such assembling; provided, that the call for the first Monday in February, 1899, shall be issued by the commissioner of labor statistics. When such delegates shall have assembled on the first Monday in February, 1899, the commissioner of labor statistics shall preside until the State Association of Miners shall have organized. The delegates present at the time and place fixed for the said first assembly, or any subsequent assembly, shall be deemed a quorum competent to transact all business to be done. The delegates shall elect a president, vice-president, and secretary, and said secretary shall be known officially as state secretary of mine industries, and shall be *ex officio* state mine inspector, and shall collect and publish statistics of mine industries of the state. Said officials shall constitute the executive board of said association and shall hold their offices until the next annual meeting and the election of their successors; but upon demand of the presiding officers of five associations, at any time, the president shall immediately convene the delegates, by special call issued in like manner as the annual call, for the purpose of electing a successor to said secretary, and if, at said election, another person shall receive a majority of the votes cast, he shall immediately be entitled to succeed said secretary. One so elected may be removed in like manner.

SEC. 3. When said delegates shall have assembled on the first Monday in February, 1899, and shall have elected officers, and the State Association of Miners shall be deemed constituted, and the commissioner of labor statistics shall so declare, and the president elected shall thereupon assume his functions, and said society shall thereafter continue and shall be known by said designation of the State Association of Miners.

SEC. 4. The term of office of the state mine inspector shall cease at noon on the 1st day of July, 1899, and said secretary shall thereupon be vested with all the powers given to and charged with all the duties cast upon the state mine inspector by any law of this state, and shall become and be in all respects the successor of said state mine inspector.

SEC. 5. The annual report of said secretary shall be published as those of

other state officers, and he shall receive a salary of \$1500 per annum, payable as other state salaries are paid, and not to exceed \$1000 for expenses. He may, by permission of the executive council, appoint one deputy mine inspector, to hold at his pleasure, and to receive a salary of seventy-five dollars a month, and necessary expenses, to be audited by said secretary and certified to the state auditor for payment monthly.

SEC. 6. All laws now in force referring to the state mine inspector, not inconsistent with the provisions of this act, shall, after the 1st day of July, 1899, be construed to refer instead to the said secretary of mining industries.

SEC. 7. Every association desiring to be represented in said meeting on the first Monday of February, 1899, shall, at least five days before said meeting, certify to the commissioner of labor statistics the appointment of its delegates.

SEC. 8. This act shall take effect and be in force from and after its publication once in the official state paper.

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INDEX.

	PAGE
Boiler inspections, mine maps, etc.....	160
Cherokee county.....	32
Directory of Cherokee county mines	34, 35
Inspection of Cherokee county mines.....	32-47
Coal product of the United States.....	8
Coal product of Kansas.....	9
Crawford county.....	10
Directory of Crawford county mines.....	12-15
Inspection of Crawford county mines.....	10-31
Escapement-shaft law.....	157
Fatal accidents, list of, for 1899	124
Introduction	5
Law creating State Miners' Association	171
Leavenworth county.....	63
Directory of Leavenworth county mines	71, 73
Inspection of Leavenworth county mines	63-66
List of delegates in second annual convention.....	165
Mine explosions	88-113
Article by John Verner, of Iowa	91
At Mount Carmel mine No. 6	88
Inquest and inquiry.....	96-113
Map of mine No. 6, where fatal explosion occurred	96
Mine maps, boiler inspections, etc.....	160
Miners' earnings.....	81-87
Cherokee county.....	82
Crawford county.....	81
Leavenworth county	86
Osage county.....	82
Minutes of second annual convention of miners	163
Non-fatal accidents, list of, for 1899	134
Table of, for twenty years.....	141
Osage county.....	48
Directory of Osage county mines	52-55
Inspection of Osage county mines	50-62
Other Kansas coal-mines.....	67-80
Atchison county.....	67
Bourbon county	67
Chautauqua county.....	67
Cloud county.....	68
Coffey county.....	69
Directory of mines.....	70-73
Elk county.....	74
Ellsworth county.....	74
Franklin county	74

Other Kansas coal-mines—*Continued*:

Labette county	76
Lincoln county	79
Linn county	76
Republic county	79
Russell county	79
Shawnee county	80
Penitentiary coal-mine	64
Recommendations	119
Screen law	142
Second annual convention of miners	163
Single-entry system of mining	123
State Miners' Association, how organized	171
Strikes	114
Supreme court decision on screen law	149
Dissenting opinion of Justice Smith	153
Third annual convention of miners, date of	170
World's product of coal	7

